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SECTION OF SURGERY.

Sir Henry M. W. Gray, K.B.E., C.B., C.M.G., F.R.C.S.Edin., President.

DISCUSSION ON ANAESTHETICS FROM THE SURGEON'S POINT OF VIEW.

OPENING PAPERS.

I.—WILFRED TROTTER, M.S., F.R.C.S.,
Surgeon, University College Hospital, London.

THE RELATIONS OF ANAESTHETIST AND SURGEON.

A surgical operation, like every other product of concerted action, demands for its complete success something more than the mere exercise of the special aptitude and knowledge of those who take part in it. It demands from each actor not only the full exercise of his own craft and an absorbed attention to its peculiar problems, but also a sympathetic awareness of the problems before his fellow actors, and a willingness to regard their difficulties as in some degree his own.

This sympathetic understanding of one another's work is indispensable between the surgeon and the anaesthetist if the full advantages of modern surgery are to be available for the patient. Surgery has now rendered practicable many procedures in which the margin of safety is necessarily of the narrowest, but in which success is to be looked for with reasonable confidence if every possible precaution is taken and every avoidable risk is met. In such circumstances there must be the closest understanding between anaesthetist and surgeon in the choice and modification of methods, and in deciding where one or other can yield a point or must resist any compromise of his requirements. The successful management of anaesthesia in what we may call these frontier provinces of surgery demands so full a knowledge of the actual surgical conditions that one is inclined to suppose that there will be in the future a closer and closer approximation of the training of the anaesthetist to that of the surgeon, and a more and more complete assimilation of the anaesthetist into the surgical team. This consideration is to my mind much reinforced by the fact that so many of the most valuable methods of inducing anaesthesia at the present day—such as the various regional and infiltration methods—are definite surgical procedures in themselves and seem to make it obvious and inevitable that the anaesthetist should take his part in the ensuing operation.

In certain operations such as those on the mouth, the nose, the pharynx, and the upper air passages, the relations of anaesthetist and surgeon have always tended to be rather confused and difficult to regulate. Here again it seems probable that the solution of difficulties will ultimately be found in the anaesthetist joining the definitely surgical group of participants and taking his part with sterile apparatus and hands in the operation itself.

In making these suggestions my object is less advocacy than foresight, and although I think such an evolution of the status of the anaesthetist is on the whole to be desired, I put it forward here merely as a probable development, without in any way wishing to carry conviction that it should be actively sought after.

THE ANAESTHETIC PROCEDURES NOW AVAILABLE.

At a time when the prestige of operative technique is so enormously and so deservedly high, it may be not without point to remind ourselves that, however much we may admire and emulate artistic workmanship, this is not and cannot be the *ultimate* aim of the surgeon. Beautiful workmanship is usually his most certain means, but his object is the cure of his patient as safely, as promptly, and with as little disturbance of mind and body as his skill and judgement allow him to do. Surgery, then, as an art is, and must always be, severely and humbly practical, and such artistic beauty as it can possess must come not more from fine craftsmanship than from courage, judgement, patience, and a willing submission to working under difficulty and restraint. Such reflections are not without relevance to the subject of anaesthesia from the surgeon's point of view. In judging the value of a given method he will, of course, insist upon being given a reasonably quiet field for his work, but will ask no more than is adequate for effective workmanship and will be prepared to submit to any restriction, however irksome, or any justifiable modification of his method that can be shown to be on the whole to the patient's advantage.

When we turn to the various means of producing anaesthesia, it is at once clear that in spite of the great progress that has been made of recent years there is no single method capable of general application to all cases. Indeed, one may say that at the present time it is more than ever the fact that in every individual case the choice of an anaesthetic must be made from a large number of possibilities, and that this choice frequently involves very careful consideration.

In going through the list of the various methods I shall limit myself strictly to matters within my own experience, and would be understood as claiming no greater validity for the opinions I shall express than is due to impressions acquired in clinical work. It will be convenient to enumerate the methods I am familiar with and to make on each in turn what comments seem necessary to the purpose of this paper.

We may classify the methods to which I shall refer in the following simple way:

1. *Inhalation Methods.*—Ether; chloroform; nitrous oxide.
2. *Regional Methods.*—Spinal; sacral; nerve trunk anaesthesia.
3. *Local Methods.*—Infiltration.

Inhalation Methods.

Ether is the nearest approach we possess to an anaesthetic of general use, and if one were limited to a single form of anaesthesia the inhalation of ether would undoubtedly have to be chosen. With all the advantages of modern methods in preparing and using the drug, it has many serious drawbacks if we consider it not merely as a means of rendering operations possible but with a broad view of the patient's interests. Ether anaesthesia renders possible the local and limited interference of the surgeon only by profoundly drugging the whole body of the patient and putting him into a state of coma that is uncomfortable and disgusting to enter and even more disgusting to recover from. The stimulating effect of the drug is such as to overdrive the circulatory and respiratory activities of the patient throughout the administration, and thus to add seriously to the exhausting effect of the operation. It is notoriously irritating to the respiratory organs and the stomach, and thus frequently leads to coughing, and usually to vomiting, in the immediately post-operative period. There can be no doubt that the most absolute repose is of great value for at least the first twenty-four hours after all serious operations, and that a liability to cause post-operative vomiting should properly be regarded as a grave disadvantage in any anaesthetic method.

The advantages of ether are: ease of administration, immediate safety, and profundity of anaesthesia. It is seen at its best in operations of moderate length and severity, when it can safely be preceded by narcotic drugs, and in operations where the wound will not cause vomiting to be painful, respiration to be shallow, or coughing ineffective. In very severe and long operations that are apt to be followed by much shock, ether, especially when a large amount is necessary to maintain proper anaesthesia, may undoubtedly be of itself the decisive factor against success.

Chloroform is probably at the present time less used and in less estimation as an anaesthetic than it has ever been. Speaking with all proper diffidence, I do not hesitate to say that in its own proper field—a matter for the most careful consideration—it still has uses for which no effective substitute has been found, and that it remains an indispensable ally to the surgeon.

The numerous disadvantages of chloroform include its immediate danger, the relative lack of depth in the anaesthesia it produces, its not inconsiderable irritant effects on respiratory and gastric mucous membranes, and, above all, its capacity to produce the so-called delayed chloroform poisoning.

Over against these must be set its power to produce in suitable cases a smooth and placid anaesthesia unconfused by the artificial and exhausting floridity of the other patient,

and allowing the surgeon at any moment to estimate the actual state of affairs, its special suitability for use in the aged, its usefulness in cases where any increased turgescence of the respiratory tract is inadmissible, and its almost absolute safety when given through a laryngotomy or tracheotomy opening.

On account of its immediate dangers chloroform is absolutely inadmissible in infants and children in all circumstances; it should never be used for trivial operations, and what may be called casual anaesthetics; and it should not be used for robust and young or middle-aged adults unless called for by some very special indication.

On account of its liability to produce progressive metabolic disturbance of the delayed poisoning type, chloroform should never be used in young people suffering from acute or chronic infections, in patients suffering from malnutrition or starvation, or in diabetics.

On account of its relatively shallow anaesthesia and the liability of post-operative vomiting, when it occurs, to be persistent, chloroform is not usually admissible in serious abdominal work.

In my own practice chloroform is used in all mouth, jaw, larynx, and pharynx cases, almost invariably in combination with laryngotomy or tracheotomy. I have never seen the least cause for anxiety in a series of many hundreds of cases of this type after the windpipe has been opened, though I have known an unaccustomed anaesthetist to be a good deal disturbed by the periodic respiration with long apnoeic pauses that usually sets in in elderly patients after tracheal breathing has been established. Chloroform is also used for a large number of the brain and spine operations and for the radical operation for breast cancer. This last indication deserves perhaps a word of comment. The exaggerated breathing and excited circulation of ether anaesthesia make it especially ill suited for an operation which strips so large an area of the chest wall and divides so many veins that pierce it; moreover, the same effects of ether, while they add to the shock, disguise its onset. It is because chloroform so precisely avoids all these disadvantages that it seems decidedly to be preferred to ether in this operation.

Nitrous oxide is singular among the anaesthetics of this group in being incapable of producing an anaesthesia comparable in profundity with that of ether or chloroform. In my experience it is only in delicate or enfeebled patients that gas can be relied upon by itself to produce a steady and adequate anaesthesia. It will usually be necessary to supplement it by the local or regional anaesthetization of the part to be operated upon. The efficiency of the method is increased by the use of narcotics. The procedure in outline is, in order: (1) a hypodermic injection of morphine hourly for the three hours preceding the operation; (2) nitrous oxide administration; (3) regional or local anaesthetic injection. Any but the most extensive abdominal operations can usually in suitable cases be done under this anaesthetic régime with complete success. The addition of small amounts of ether vapour to the inhaled gas, as is well known, extends the applicability of the method to many patients in whom it would otherwise be impossible. This addition, however, brings with it the risk of sacrificing the chief advantage of the procedure by inducing post-operative vomiting, so that an effort to avoid it is always made in my practice, even at the cost of some inconvenience to the surgeon.

The Regional Methods.

Spinal anaesthesia in the hands of the expert has no longer the disadvantage of any serious degree of uncertainty. Its usefulness is limited anatomically and physiologically.

Anatomical limitation brings it about that any operation at all prolonged cannot be extended much above the umbilicus; physiological limitations make it necessary to confine the method to patients in whom the circulatory system is in reasonably good condition and capable of reaction. Spinal anaesthesia is not, therefore, an anaesthetic suitable for enfeebled patients or for those with acute and serious abdominal conditions. It is a grave mistake to suppose that it is a possible substitute for inhalation methods when these are thought to be inadmissible on account of cardiac or vascular diseases. Its special usefulness is for operations on the lower limbs, perineum, pelvis, and lower abdomen where shock is greatly to be feared (amputation high in the lower limb); where metabolic complications are to be avoided (diabetic gangrene); and where full abdominal relaxation is essential (large abdominal herniae in fat subjects). It should generally be preceded by narcotic drugs and may often be usefully combined with the use of nitrous oxide. The free use of narcotics seems to do away with the risk of vomiting during the operation, and perhaps to diminish the incidence of headache afterwards.

Sacral anaesthesia has a small but very definite range of usefulness in limited operations on the perineum. For piles operations it gives just the anaesthesia that is needed, together with complete relaxation of the sphincter. It should, of course, be combined with narcotics. In some cases the conformation of the sacrum prevents it being carried out, but this condition can always be determined beforehand.

Nerve trunk anaesthesia is more commonly known as regional anaesthesia. It is given this name here to distinguish it from methods that are regional in a wider sense.

All local anaesthetics do and should contain a regional element, but there are a few cases in which the definite blocking of nerve trunks has shown itself to be a trustworthy and thoroughly practical method. These special cases of nerve blocking are rendered possible by anatomical conditions. Two are in common and satisfactory use—the blocking of the intercostal nerves for operations upon the chest and abdomen, and the blocking of the brachial plexus above the clavicle for operations on the upper limb. Both procedures require a certain expertness, but there can be no doubt that they should be in regular use in suitable cases. The usual combination with narcotics, and possibly with nitrous oxide, should, of course, always be considered.

The Local Method—Infiltration Anaesthesia.

Next to ether anaesthesia this is undoubtedly the method which is capable of the widest application. It is tedious to induce, and in its larger uses demands wide experience and expert knowledge. It may be regarded as having two more or less distinct ranges of usefulness: (1) in conditions where it is obviously indicated by the anatomical situation and nature of the operation, as in all superficial and definitely limited dissections, in radical cure of hernia, especially inguinal and umbilical, and in excisions of the testicle; (2) as a special procedure where other methods are urgently contraindicated it may be applied by the expert to almost any of the operations of surgery, except where diffuse infective conditions have to be dealt with. I personally do not make use of it as a routine for cerebral operations, for thyroid operations, or for extensive dissections of the neck, but it is well established as a method that is applicable to these and many other equally extensive procedures.

I do not propose to say anything about technique, but in all the wider applications of local infiltration the preliminary use of narcotics, the injection of an abundance of solution, and the giving it full time to act, are the principal factors in success.

We have now reviewed the methods which may be regarded at the present time as well established, each in its own special field of usefulness. I have mentioned no method which I have not learnt in my own experience to be, in appropriate circumstances, trustworthy and thoroughly practical. They represent the facilities which the surgeon and the patient are justified in demanding from the expert anaesthetist. I have tried to indicate in a general way the considerations which should guide us in the choice of an anaesthetic in a given case. There are a few rules that must be regarded as absolute, at any rate for the time; but on the whole it must be recognized that we are very far from absolute standardization. I confess that I am not very sympathetic with the ideal of complete standardization in surgical technique. While we have to deal with factors so incorrigibly variable as disease on the one hand, and the human mind and body on the other, concentrated and independent thought will always be necessary for the proper achievement of every surgical act.

II.—Sir WILLIAM I. de C. WHEELER,

President, Royal College of Surgeons in Ireland.

When I was asked to take part in the opening of the discussion on "Anaesthetics from the surgeon's point of view," I was rather at a loss from what angle to view the subject. The task would be easy if the title had been slightly altered, and we were asked to talk about "Anaesthetists from the surgeon's point of view!" I know of no better exercise in self-restraint than the performance of a difficult abdomina

operation with a bad anaesthetist as one of the team. From start to finish—from the time when the intestines balloon out from the abdominal cavity, midst the struggles of the surgeon and his assistants, to the time when every stitch tears through the peritoneum in the upper part of the abdomen, the operation is attended with anguish on the part of the surgeon, and subsequent misery on the part of the patient. The responsibility for success or failure rests with the surgeon; whatever happens, the anaesthetist escapes without blame or blemish.

Nevertheless, the surgeon is often in part to blame. He is in too great a hurry to commence his operation, and his manipulations are often unnecessarily severe. A hand used like a sweeping brush round the neighbourhood of the diaphragm will be reflexly resented by a patient, even when deeply under ether anaesthesia. The patient shouts for help, so to speak, by tightening his recti muscles, by increasing his respirations, and by extruding his intestines from the abdominal cavity. It is a state of affairs which adds considerably to post-operative shock.

During the course of the discussion which is to follow, we will, no doubt, be informed by anaesthetists of the relative merits of ether administered by the rectum, of intratracheal anaesthesia, of prolonged gas and oxygen as recommended by Crile, and we will have a description of the various forms of apparatus used in the practice of these methods.

The keynote of success appears to me to be, in these as in other surgical methods, contained in the one word—judgement. The nature of the operation must be considered, the type and temperament of the patient, and, last but not least, the temperament and habits of the surgeon. Some surgeons operate rapidly, some slowly; some are gentle, others are less considerate to the anaesthetized patient. The methods for the administration of the anaesthetic will vary for each type of surgeon as well as for each type of patient.

There are three points which I would like to make in this discussion, not because they are new, but because I think they do not receive the general recognition which their importance deserves.

1. Every surgeon knows that, apart from prolonged and dangerous operative procedures and apart from chloroform anaesthesia (which I never employ), and from such conditions as the status lymphaticus and unrecognized idiosyncrasies, there are times when a patient collapses and approaches the point of death on the table. The exact cause of the collapse is not always evident, nor is it always the same; on some occasions the anaesthetic is undoubtedly responsible. When the danger signs appear they are often first recognized by the surgeon. If the operation is one of laparotomy, the recti muscles suddenly become unduly relaxed, the excursions of the diaphragm gradually cease, respirations fade away, and very shortly the patient, to all intents and purposes, is momentarily dead. With a hand in the abdominal wound, the pulsations of the aorta can still be felt regular and strong. By this time the anaesthetist is pulling forward the tongue or the jaw, swabbing out the throat and giving hurried orders for a hypodermic injection of strychnine, digitalis, or camphor and oil; the head is lowered, and respiration is stimulated by brisk rubbing of the lips and cheeks. Unless there is rapid recovery no time should be lost. What should be done? Artificial respiration is the obvious answer, but it must not be by Sylvester's method or any of its modifications. In an emergency such as this, artificial respiration carried out by textbook methods is too slow, and with an open abdominal wound is both inconvenient and dangerous. Furthermore, if there is cardiac failure, massage of the heart cannot be carried on through the abdominal wound simultaneously with Sylvester's method of artificial respiration. I would urge the adoption of artificial respiration by the old direct method which was employed exclusively in the early seventies. In 1906 Sir Robert Woods read a paper before the Royal Academy of Medicine in Ireland on this subject, and since then I have had an opportunity of employing the method in at least a dozen desperate cases without a failure. The procedure is simplicity itself. There is no need to intubate the larynx; the mouthpiece of an ether inhaler is generally at hand, and when placed in position on the patient's face makes an admirable funnel through which the surgeon can blow into and inflate the patient's lungs. In the absence of a facepiece, a funnel can be readily extemporized with the closed hand. There is no resistance to overcome, the air easily enters and inflates the lungs, and is expelled automatically, or rather gurgles out with the help of gentle pressure on the chest or the abdomen. The process is repeated every four or five seconds until normal rhythmical respirations are restored.

The direct method of artificial respiration used exclusively in the early seventies was abandoned owing to faulty physiological reasoning. It was thought that, because expired air contained poisonous carbonic acid, it was wrong and dangerous to introduce it into the lungs. Such reasoning had many fallacies. First, as pointed out by Woods, the first rush of air supplied by the donor will be from the trachea and upper air passages, and therefore pure; and, furthermore, the very small quantity of carbonic acid gas in question could not be poisonous, as is shown by the free use of the rubber bag by those who employ ether by the closed method. In fact, the inflation of the lungs with expired air not only stimulates the respiratory centre, but also increases the volume of the pulse. Recently it has been pointed out that an alkali deficiency of the blood during anaesthesia can be corrected by the inhalation of carbon dioxide gas mixed with the inspired air. Sir Robert Woods concludes an admirable paper on the subject by saying that the quantity of tidal air is greater than by any indirect method and, therefore, the stimulation of the mechanism of circulation and respiration, the elimination of the poison, and the oxygenation of the blood are all as great as possible. Secondly, the impurities, if present at all, are negligible. Thirdly, the method can be employed without a moment's loss of time.

2. My second point is in connexion with the so-called ether bronchitis and ether pneumonia following operations; and I will endeavour to show that, in many cases, the anaesthetist has no responsibility whatever for these unpleasant sequelae.

After certain abdominal operations pulmonary complications may arise, whether the anaesthetic is administered by the rectum or by any other method, and often follow the employment of local anaesthetics alone. In the acute upper abdomen the diaphragm becomes rigid by the same mechanism which causes rigidity of the recti muscles. There is a general reflex splinting of the whole area involved; and in consequence the diaphragm cannot descend. This fixity of the diaphragm produces oedema of one or both lungs, and fine pulmonary crepitations can be heard at the base in most cases. These crepitations must not be mistaken for commencing pneumonia with reflex abdominal rigidity and pain.

Wilkie thinks that crepitations at the base of the lung are an additional sign of acute infections of the biliary tract, but they have a far wider significance. If oedema of the lung is produced by the fixed diaphragm before operation, the condition is still more common after high abdominal operations. It must be within the knowledge of all surgeons of experience that high abdominal operations are very frequently followed by severe cough and expectoration for the four or five days after operation, subsiding after relief of intra-abdominal tension by the first satisfactory evacuation of the bowels.

In 1916 I was called to a patient with the signs and symptoms of an acute upper abdomen. On examination of the chest crepitations were heard at the base of the right lung, and the physician in charge was of the opinion that pneumonia was developing, and that the abdominal symptoms were reflex and referred. In the course of a short time the signs of an acute colecystitis became unmistakable. About this time the late J. B. Murphy drew attention to the high mortality from oedema of the lung after closure of large umbilical hernia, due, he said, to a deficiency in the action of the diaphragm muscle (the piston of respiration) in breathing; and since then I have frequently listened to fine crepitations at the base of the lungs on one or both sides before and after operations for the acute upper abdomen.

One of the last cases under my care was one of the Ministers of the Irish Government, who was wounded in the back by a bullet. The spinal column was hit, and the bullet was deflected so that it came to lie above the right kidney in the region of the diaphragm. After the operation for extraction, fine crepitations could be heard at the base of both lungs; there was expectoration of rusty sputum, the temperature rose, and for a few days the condition of the patient gave rise to anxiety, but with the healing of the wound and gradual relaxation of the muscles the pulmonary complications, as is usual, disappeared.

I would, therefore, suggest that crepitations at the base of the lungs may be a sign in favour of an acute upper abdomen, and not against; that frequently crepitations are heard after high abdominal operations owing to rigidity of the diaphragm and recti muscles; that the tightening of the abdomen after the closure of a large ventral hernia may be followed by fatal pulmonary oedema; and that the condition—often referred to as "chestiness" by the students and house-surgeons—after operations has nothing whatever to do with the anaesthetic.

3. In conclusion, I would like to refer to the great advantage of using a local anaesthetic with or without general anaesthesia. Nearly twenty years ago I learned my first lesson in this method from the late Theodor Kocher, and I have seen your distinguished President adopt the method in numerous cases.

Whatever the operation, the subcutaneous tissues are infiltrated first and the deeper tissues afterwards, before the incision is made, with a 1/2 or 1 per cent. novocain and adrenaline solution, thus blocking off as far as possible the operation area from connexion with the cerebro-spinal centres. Complete relaxation of muscles is obtained, and the anaesthetic solution, finding its way along intermuscular and interfascial paths, renders the various layers to be divided plain and distinct. Bleeding is reduced to a minimum, and in the blanched area nerves and blood vessels stand out in a manner only seen in the dissecting room. I think there is no doubt whatever that the shock of an operation is considerably decreased, and the short time and labour involved in the infiltration of a local anaesthetic is repaid a hundredfold.

For some time abdominal and other major cases were operated upon with local anaesthesia alone, but the strain on the surgeon is greater, and if, in abdominal cases, any drag is put upon the mesentery the patient complains of severe pain in the back, and occasionally unexpected difficulties are encountered and a general anaesthetic becomes necessary. To pass from a local anaesthetic to a general anaesthetic in the middle of an operation for obvious reasons is to be avoided. It is better to commence by a combination of both, unless in those cases which are almost certain to be straightforward and uncomplicated. Local anaesthesia for tracheotomy is ideal, and it is a great advantage to inject 10 minims of 2½ per cent. cocaine solution into the trachea before opening to obtain tranquil tracheotomy, as recommended by StClair Thomson. There is no reflex cough, no danger of aspiration of blood, and no disturbance rendering difficult the introduction of the tube.

A general anaesthetic need never be used in cases of varicocele, bunions, hammer-toes, the straight appendix operation, and so forth. In abdominal operations the parietal peritoneum becomes absolutely lax and insensitive if the overlying subcutaneous tissues and muscles are infiltrated. Provided there is no pulling on the mesentery, there is no pain, but any tension transmitted to the posterior peritoneum produces the pain in the back, seen in all conditions which directly or indirectly involve the posterior parietal peritoneum, such as gall-bladder diseases, posterior gastric ulcer, and abdominal aneurysm.

Time does not permit a reference to the dangers of chloroform, but it is difficult to understand on what method of reasoning it is still administered for the removal of tonsils, having regard to the danger of status lymphaticus, or in prolonged bone operations in children, with the ever-present danger of acidosis, or in cases of the septic abdomen, for in the latter case the extra burden put upon the liver in eliminating the toxins of chloroform may prove fatal.

The preparation of patients for an anaesthetic requires thought. Crile attributes much of his success to the painstaking preparation of cases of hyperthyroidism before thyroidectomy. Suffice it to say that preliminary purgation is unsound; brisk purgation before and sips of water after is a sure way of adding to discomfort and, to some extent, to the dangers of operation. Fluid should be given in unrestricted quantities to within an hour of operation, and as soon after as possible. Stomach cases are no exception to this rule.

Troubles for which anaesthetics are often blamed are conspicuous by their absence if there is a proper preparation before operation, and not too many restrictions for the few days following. The sisters in Mercer's Hospital in charge of the wards have the following written instructions in connexion with the patients under my care:

Preparation before Operation.

1. Twenty grains of bicarbonate of soda every four hours for two or three days if necessary, until urine is alkaline.
2. Large quantities of water by the mouth, or saline by rectum, for the ten or twelve hours preceding operation.
3. In anxious cases, or in children about to undergo bone operations, glucose to be given if possible for two or three days before operation.
4. No enema on morning of operation.
5. No laxatives to cause purging in patients preparing for operations. Simple laxatives, as in non-operative cases, are alone necessary a day or two before.
6. Special instructions to be given in cases of intestinal cancer.

Patients after Operation.

1. Unless restricted from some special reason, such as fracture of bones, etc., the patient may move as much as he likes in bed from the first after operation.
2. The patient may sit up out of bed on the second or third day after ordinary operations, provided they are not drainage cases and there is no fever.
3. The freedom of the room to be given after four days; a bath after seven days, and out for walks or drives not later than the tenth day.

DISCUSSION.

Dr. A. L. Flemming (Bristol) said that he felt a considerable sense of responsibility in taking part in the discussion because it dealt with a very important feature in the progress of the specialty of anaesthetics; and he was relieved to find that Mr. Trotter had laid stress upon the necessity for co-operation between surgeon and anaesthetist, so essential in modern surgery. The idea of antagonism between the two specialties might be due to the fact that the anaesthetic acted as a protective barrier between the patient and surgical assault, but this barrier was by no means impervious, and it was only by adjustment between attack and defence that adequate protection could be assured. Where surgery could be gentle, rapid, and dry, it was wonderful what an efficient defence was provided by ether anaesthesia, but probably this method could not be used too freely without the risk of producing some ill effect, and for that reason it was important to limit, as far as possible, the extent to which the patient was saturated with ether. In that direction local anaesthesia and N_2O might be of real service. Before local anaesthesia, either by itself or as an adjunct to narcosis, could come into more general use it seemed necessary that two conditions should be satisfied: surgeons would have to be convinced of its need, for without their full sanction its employment could not be considered for an instant; and great changes would be called for in the teaching arrangements. At present it was quite difficult to ensure that each student became reasonably familiar with the ordinary signs of anaesthesia, and it seemed to him that if a knowledge of local anaesthesia was to be acquired by him it would be necessary for the educational and examining bodies to reconsider the degree of importance which they intended to attach to this subject.

Dr. Alfred E. Boyd (Dublin) said that one point in which they, as anaesthetists, failed too often was that they did not sufficiently study the psychology of their patient. When a patient presented himself for some simple operative procedure they were apt to regard the case merely as an incident in the day's work, while to the patient it was an event in his life. In many cases the patient dreaded the anaesthetic, with the surrender of personality involved, far more than he did the knife. Lack of sympathy between anaesthetist and

patient led to an unsatisfactory induction, and a case that gave trouble during the induction period was apt to be a case which would cause anxiety during the course of the operation. The psychology of the surgeon had also to be borne in mind. It was an advantage to know the man with whom the anaesthetist was working, his methods and his temperament. During the past week he had been attending the meetings of that and other Sections, and until Sir William Wheeler spoke that day he had not heard one word said on the subject of oil-ether colonic etherization. He was convinced that in certain cases that method was of extreme value. Used in high ether percentages, undoubtedly it had given rise to unfortunate effects—primary respiratory failure during the course of anaesthesia, or proctitis of greater or less severity, sometimes with the passage of blood per rectum within the consequent forty-eight hours. These dangers could be avoided almost entirely by the use of the control method in which the strength of ether in the standard solution was 50 per cent., the vehicle being olive oil. The success of the method depended on a rigid adherence to technique. The patient was weighed, as weight was the governing factor in regard to dosage. The dose to be administered by the bowel was one ounce of the standard 50 per cent. solution of ether in olive oil for every twenty pounds body weight of the individual: thus, a ten stone patient received seven ounces of the mixture. On the night preceding operation the bowel was thoroughly washed out, and on the morning of the operation a simple enema was given and the patient left as far as possible at rest. At least an hour before the time fixed for operation, morphine grain 1/6, with atropine grain 1/100, was administered hypodermically; this was omitted in the case of children and of those who were dull, lethargic, or comatose. A few minutes after the hypodermic had been given the ordered quantity of oil-ether mixture was passed slowly and continuously into the colon through a soft rubber catheter connected with a tube and funnel. The catheter should be passed as high as it would travel without force. The injection should be completed in about half an hour. Should the patient be restless or excitable two drachms of paraldehyde might be added to the oil-ether mixture. The catheter was then disconnected from the tube and funnel and left *in situ*. The patient was left at rest, the bed was screened, and the blind pulled down, the nurse in attendance keeping within easy reach, but preferably out of sight. Usually the patient became drowsy rapidly, sometimes muttering in an amiable confusion, and then passed into a light sleep. Half an hour after the injection had been completed the anaesthetist approached as noiselessly as possible, some minims of oil of orange in absolute alcohol (ol. aurantii 25 per cent., alcohol absolute 75 per cent.) were dropped on the pillow to mask the pungency of the ether vapour, and followed by a few drops of ether. The upper sheet was gently drawn up to form a tent and the patient inhaled an ether-laden atmosphere until the onset of stertor. This usually took about four minutes. When stertor was established the patient was lifted on to the trolley and conveyed to the theatre—anaesthesia generally being deepened during transit. He was moved to the table and the operation began. By that time he had settled down to a placid anaesthesia, characterized by an absence of mucous secretion and venous congestion. But it was an anaesthesia which tended to lighten as time went on. In this lay its safety; the method was under control. Sooner or later symptoms supervened calling for more anaesthetic, such as phonation, twitching of the muscles of the face, movement of a limb, or retching movements in cases in which there was any traction in the throat. A few drops of ether applied to the pillow tipped the balance and placidity was restored. When the operation was completed the bowel was washed out, and when that was done 3 oz. of olive oil should be injected into the colon and the case left at rest. By that time he had passed into a state of analgesia which continued for some hours after operation. The class of cases to which the method was applicable comprised the general surgery of the head and neck, growths, innocent and malignant, within and around the buccal cavity, glands in the neck, and, in an especial degree, goitres, plastic operations on the face and neck; throat and nose operations, radical operations on the sinuses, craniotomy, exploration of the brain, cerebral and cerebellar growths, Gasserian ganglion operations, and breast cases.

Mr. Adams A. McConnell (Dublin) observed that Mr. Trotter believed that chloroform was indicated for operations on the brain, mouth, neck, breast, and spine, and he implied that no other anaesthetic was as satisfactory from the surgeon's point of view. Since Boyd introduced his modification of Gwathmey's method of colonic anaesthesia by ether, Mr. McConnell had used his method combined with local infiltration in every case of brain tumour, in removal of the Gasserian ganglion, in diathermy of the mouth, tongue, and pharynx, goitres, amputation of the breast and laminectomy, and he could say emphatically that it was better than any chloroform anaesthetic, no matter by whom administered, and, moreover, it removed much anxiety during and after the operation. They had been using small doses of pure magnesium sulphate subcutaneously as a preliminary to anaesthesia, with strikingly good results.

Mr. Firmin Cuthbert (Gloucester) said that to his mind the greatest importance should be attached to the necessity of co-operation between the surgeon and anaesthetist. Excluding, of course, all those cases of minor surgery, in which local anaesthesia had such a large field of usefulness, there was no doubt that the anaesthetist should be present whenever more major procedures are undertaken with local anaesthesia, whether by infiltration of the local area, or the method of paravertebral injection of nerves was employed, or nerve-blocking was pursued. There was plenty for the anaesthetist to do, even if no general anaesthetic at all was administered, for instance—he always put a great stress upon the necessity of the blood pressure being carefully watched every fifteen minutes. A very valuable alarm could be given in the event of the fall of blood pressure to any degree in the neighbourhood of 90, and other treatment could be applied before evil signs showed themselves. In a general way all his cases received an injection of morphine grain 1/6, with scopolamine, grain 1/100, an hour before the time of operation. In fat, stuffed-up people, or those of a bronchitic type, an addition of atropine grain 1/200 was made. The infiltration of novocain, 1/4 per cent. or 1/2 per cent., according to the case, was then administered—100 c.cm. of this with 10 minims of adrenaline solution 1 in 1,000 could be used without any ill effects; general anaesthesia of a very light nature was given just prior to the patient being taken into the theatre. He maintained that in all prolonged operations the three elements of danger were bleeding, sepsis, and the anaesthetic, and the reduction of these to the minimum constituted the stronghold of success. One argument against this plan was the trouble and time taken in these preparations an hour before the operation. The infiltration itself only took a few minutes, and the interval could be occupied by the surgeon in doing other things (if he did the infiltration himself), and by the time he had prepared himself there was very little time wasted. It was remarkable what a small amount of anaesthesia was required, and by the time the stage of sewing up the wound was arrived at no anaesthetic at all was necessary, and the patient was returned to bed in a comfortable somnolent condition produced by the previous dose of morphine. There were many cases in which general anaesthesia could be dispensed with in the first stages of a prolonged operation, such as the removal of naso-pharyngeal tumours, preceded by obtaining control of the external carotids by slipping a tape under these vessels, so that Crile's clamps could be applied if necessary, and especially as an aberrant origin of these vessels could not be foreseen. The laryngotomy tube could also be easily put in under local anaesthesia, and then the general anaesthetic could be given, the pharynx packed, and a bloodless operation could be proceeded with in comfort to the surgeon and patient. In cases of strangulated hernia in old people a general anaesthetic was best avoided. An old lady of 91, with a strangulated femoral hernia for two days, produced from under the bed a bucketful of vomit; she made a rapid recovery from her operation. If

she had had a general anaesthetic he could not help thinking that she would have been deprived of the extra three years which were granted to her. There seemed to be no doubt that in brain operations a general anaesthetic was best avoided. For these he had used a 2 per cent. solution of novocain with the usual proportion of adrenaline. It enabled him to remove the segment of bone without pain, and avoided the terror of liability of post-operative vomiting. With few exceptions, when local anaesthesia was well administered, the fear of an operation on the part of the patient was diminished rather than increased. With eyes bandaged, and ears plugged with wool, together with absolute silence in the theatre, the patient should not be inconvenienced by more than the ordeal of lying on the table. By far the greater strain fell upon the surgeon himself.

Mrs. DICKINSON BERRY (London) urged the advisability of employing, especially in thyroid operations, local anaesthesia along with light ether anaesthesia. In using light ether anaesthesia the stimulating effect was maintained and there was no fall of blood pressure at the end of the operation. In ordinary ether anaesthesia there was a rise of blood pressure during induction, and a rise also when the patient began to come round and was allowed to strain. She deprecated the idea that a general anaesthetic was to be given only if the local anaesthetic proved unsatisfactory. The patient was apt to struggle and they did not obtain a smooth anaesthesia. In the employment of local anaesthesia the patient did not complain of pain, but without it complained of dragging sensations. These dragging sensations could be obviated by the use of light general anaesthesia.

Mr. BASIL HALL (Bradford) said that about 70 per cent. of his work was abdominal, and it was from the standpoint of the abdominal surgeon that he spoke. He always looked with great suspicion upon any anaesthetist who was a man with many "gadgets." He did not think it mattered very much, or at all, what percentage of the anaesthetic was administered. What he required was an anaesthetist who studied the patient, and who judged the patient, with no special reference to percentage and other formulae in regard to the anaesthetic substance. He deprecated also the use of mixtures, preferring simplicity. He thought that half the secret of satisfactory anaesthesia lay in a close association of the anaesthetist with the surgeon and an appreciation of both with the difficulties presented to them. He thought there was a tendency to push ether anaesthesia too far. What was wanted, in his judgement, was just enough and no more. Ethanesal was a valuable anaesthetic in so far as it was non-irritant, and produced less sickness than ether. After having tried other various experiences he had come back to the position from which he first started as an operating surgeon, and that was the employment of open ether anaesthesia, possibly, if necessary, preceded by a very small dose of heroin or of morphine, or a few whiffs of chloroform for induction. Local anaesthesia, he thought, he had given up for good.

Sir CRISP ENGLISH (London) spoke of the great importance of a discussion of this kind between anaesthetists and surgeons. He said that eighteen months' experience with ethanesal had convinced him that it was a decidedly better anaesthetic than ordinary ether. In the induction of anaesthesia in children and in nervous patients ethyl chloride was invaluable and prevented the distressing scenes which often blackened the first stage of anaesthesia; and gas and oxygen given by an expert with a proper apparatus was infinitely preferable to other forms of anaesthesia in a very large number of operations.

Mr. CHARLES PANNETT (London) was glad to hear emphasized the fact of delayed shock after ether. He himself would not acquit the anaesthetist, employing open ether, for all responsibility for the subsequent lung conditions frequently found. He had tried in St. Mary's Hospital to work a method of prevertebral anaesthesia. Its main disadvantage was the length of time—namely, twenty minutes—required for induction.

Mr. TROTTER, in reply, mentioned that morphine given in three small doses was of great value before operation and was also of great value in the use of local anaesthesia. He thought that the technique of local anaesthesia should be acquired by anaesthetists, and the practical work should be done by them, because there was always the possibility that their services would be required during the operation if a general anaesthetic were found to be necessary.

VENTRICULOGRAPHY AS AN AID IN THE LOCALIZATION OF INTRACRANIAL TUMOURS.

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THE cerebro-spinal fluid is secreted by the choroidal plexuses in the ventricles of the brain. It is absorbed from the subarachnoid space, chiefly from that part of it which lies in relation to the cerebral cortex. The only communications between the ventricles and the subarachnoid space are the foramina of Magendie and Luschka in the roof of the fourth ventricle. If a tumour be situated below the tentorium cerebelli it tends to press on the mid-brain, pons, and medulla, and so to cause some obstruction to the outflow of cerebro-spinal fluid through the aqueduct of Sylvius and the fourth ventricle (Fig. 1). Such obstruction leads to retention of fluid in the third and lateral ventricles and hence to their dilatation—just as obstruction to the ureter leads to hydronephrosis. If a tumour be situated in a cerebral hemisphere it cannot grow outwards because of the

FIG. 1.—T represents tentorium cerebelli. c and c represent the communications between the ventricular system and the subarachnoid space.

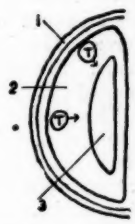

FIG. 2.—1, Skull. 2. Cerebrum in section. 3, Lateral ventricle. T and T represent direction of extension of tumours.

resistance of the calvarium; it grows inwards and sooner or later encroaches on the lateral ventricle so that the latter becomes deformed, distorted, or partially occluded (Fig. 2).

It is clear to anyone who has studied *post-mortem* specimens of intracranial growths that knowledge of the size and shape of the lateral ventricles would be of the greatest assistance in the localization of tumours during life. In July, 1918, Dandy[1] of the Johns Hopkins Hospital showed that it is possible to obtain radiograms of the lateral ventricles in the living subject. Since his paper appeared several cases in which his method has been used have been published in American journals, but with the exception of three cases published by me in April, 1921,[2] no adult cases seem to have been reported in this country. Fraser[3] has employed the method in cases of hydrocephalus in children.

Principle of the Method.

If air be substituted for the fluid contents of one lateral ventricle and a radiogram taken, the air-filled ventricle will be clearly outlined on the radiographic plate in striking contrast to the dense calvarium, just as air in the intestine or pleural cavity is revealed on radiographic examination. When the photograph of one ventricle has been taken the head is slowly turned so as to allow the air to bubble through the interventricular foramina into the opposite ventricle, which is then photographed. If both lateral ventricles are dilated the tumour is probably subtentorial; if one lateral ventricle shows a deformity, that deformity is usually in close relation to the tumour.

Technique.

The following technique has been evolved from personal experience of the method:

The patient's head is shaved. If the patient is excitable, timorous, or unlikely to stay quiet during the procedure, he is given rectal anaesthesia by Boyd's modification[4] of Gwathmey's method. We have found this necessary on two occasions only; local anaesthesia is the routine. The table should have a comfortable head-rest rather than a pillow. A point (A) 1¼ inches behind the external auditory meatus and 1¼ inches above Reid's base line is marked on the side to be injected. On the opposite side of the skull a point (B) 1¼ inches behind the external auditory meatus and 2¼ inches above Reid's base line is marked (Keen). The whole depth of the scalp is infiltrated at these two points with 0.5 per cent. novocain solution. A vertical incision two inches long is made with the point A as its middle point; this incision goes down to the bone. The bone is cleared with a periosteal elevator, and a mastoid retractor keeps the edges of the wound apart. The skull is perforated in the middle of the incision by Hudson's drill, or by de Martel's trephine, and a small opening is made in the dura mater. At the point B, on the opposite side of the skull, an incision

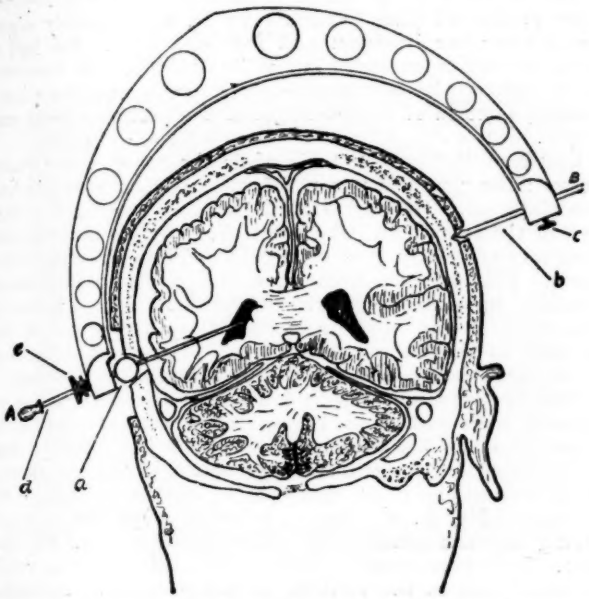

FIG. 3.—Coronal section of head with instrument in position. For description see text.

half an inch long is made down to the bone. Into the hole the ball of the instrument fits (Fig. 3, *a*), through the incision B, the point of the drill (Fig. 3, *b*) is made by a few turns to engage in the outer table of the skull. The screw (Fig. 3, *c*) is now turned, and thus the drill is fixed. The graduated cannula 5 inches long (Fig. 3, *d*) is passed through the A end of the instrument and therefore through the ball; it is advanced until fluid appears or until it has reached a depth of two inches from the dura mater. When cerebro-spinal fluid appears the screw (Fig. 3, *e*) is turned, and so the cannula is locked. The whole apparatus, including the cannula in the brain, is thus rendered rigid, so that no movement on the part of the surgeon or patient can displace the point of the cannula from the ventricle. The head is now held so that the patient looks at the roof. A 2 c.cm. syringe with a three-way tap is fitted to the cannula, 2 c.cm. of fluid are withdrawn very slowly, the blood pressure being taken during the process. The tap is turned, the fluid evacuated from the syringe and air aspirated. Another turn of the tap permits the injection of 2 c.cm. of air into the ventricle, very slowly, the blood pressure being observed constantly. The alternate aspiration of fluid and injection of air is repeated until no more fluid comes; the patient's face is now turned towards the side injected to permit any fluid from the posterior horn to gravitate towards the cannula. When no more fluid comes the syringe is detached from the needle and some air permitted to escape, in order to ensure that the intraventricular pressure is not increased by the expansion of air in the ventricle consequent on its rise in temperature. The cannula is now withdrawn, the apparatus removed and a dressing applied. The maximum amount of fluid withdrawn in my series of cases was 160 c.cm., the average amount was 40 c.cm., and the maximum amount of air injected was 150 c.cm. On no account should an amount of air be injected in excess of the quantity of fluid withdrawn. The blood pressure is the best indication of the intraventricular pressure and the whole process should be carried out without modifying the blood pressure. During aspiration the blood pressure falls, during injection it rises. It is for this reason that a small syringe is used and perhaps a minute is taken to fill it.

When the injection is completed the patient lies with the injected side uppermost, and is taken to the *x*-ray room. The first plate shows that ventricle. The patient then inclines his head towards the side of injection so that air gets through to the anterior horn of the opposite side. He is then told to look straight up at the ceiling and another radiogram which outlines the anterior horns of both ventricles is taken. Rotation of the head is again carried out in order to feed all the air into the opposite ventricle, a photograph of which is then obtained. When air is present in both anterior horns rapid adoption by the patient of the prone posture allows the air to reach both posterior horns, which can be photographed. Sufficient information is usually obtained by radiograms of each lateral ventricle and of the anterior horns. The whole procedure may take nearly an hour, but no haste is permissible during aspiration or injection.

In the earlier cases the instrument depicted was not used, the ventricle being punctured freehand in the usual manner; it was soon found that the movements of the syringe and the necessary manipulations of the patient's head made it extremely difficult to keep the cannula steady in the ventricle, which was sometimes lost after the withdrawal of a small amount of fluid. The instrument* was made for me primarily in order to keep the cannula steady; incidentally it is useful as a guide to the introduction of the cannula, for the latter is directed inevitably towards the point of the drill. Keen, in 1884, described the points on the surface of the skull at which a needle may be introduced and to which

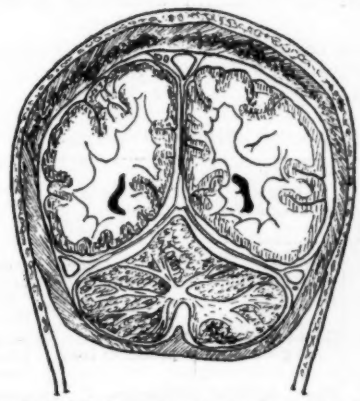

FIG. 4.—Coronal section through posterior horns to show normal relation of tentorium cerebelli. When a large tumour is present below the tentorium the latter becomes dome-shaped.

it should be directed in order to reach various portions of the lateral ventricle.

Difficulties in Technique.

It is essential at the outset to be certain that the piston of the syringe is a perfect fit and that the cannula is as accurately adapted. I have the cannulae specially ground to fit the nozzle of the syringe, otherwise air enters the syringe during withdrawal of fluid or air escapes at the junction during injection and the amount entering the ventricle is unknown. A short rubber junction between the syringe and cannula is used if the ordinary junction is not airtight. The length of the cannula should be 3 in., but when the instrument is used it should be 2 in. longer.

Apart from faults in the syringe and cannulae there are two difficulties. (1) After insertion of the cannula no cerebro-spinal fluid appears; this may be due to distortion of the ventricle or to occlusion of the part of it aimed at. When a large tumour is present in the posterior cranial fossa it sometimes pushes up the tentorium cerebelli and presses on the occipital lobes of the brain so that the posterior horns on one or both sides are reduced to mere slits and their junction with the body of the ventricle may be displaced upwards. In such a case an attempt to puncture the posterior horn or to enter the ventricle opposite the trigonum ventriculi may fail as the cannula may pass below the cavity. If the cannula be directed more upwards than usual on a second attempt the ventricle may be found. If

* The instrument is made by Mr. Edwin Haines, Dublin, the cannula by Messrs. Allen and Hanbury.

this does not succeed the anterior horn may be selected for the next trial, in which case the patient lies prone with the head bent over the end of the table; as this is not a comfortable position, the first method described is usually chosen. In cases of cerebral tumour there is usually some indication of the side affected and the opposite side is chosen for the puncture. I have failed to find the ventricle by the method described above in two cases, one of a cerebellar tumour, the other of a growth involving both the middle and posterior cranial fossae. (2) So small a quantity of fluid is obtained that it is impossible to inject enough air to obtain a satisfactory radiogram. This has occurred in five cases. Three were early cases in which the needle slipped from the ventricle, but in these repetition of the puncture some days later gave satisfactory results. In two cases the instrument was used, and the ventricle found readily, but the fluid came away so slowly that the patients got tired of waiting.

Indications for Ventriculography.

If localizing symptoms be absent or if they have proved insufficient to guide the surgeon to the tumour ventriculography is indicated. No case of mine with a definite clinical diagnosis was submitted to ventriculography unless an operation had failed to find the growth.

Results.

I have attempted to perform ventriculography in fourteen cases and have succeeded in obtaining good radiograms in nine.

The following table gives the clinical diagnosis, the data gained by ventriculography, and the ultimate operative or *post-mortem* findings.

Ventriculography Attempted.

Case.	Result of Operation.	Clinical Diagnosis.	Radioscopic Diagnosis.	Ultimate Operative or *Post-mortem* Findings.
1	Successful	Tumour—occipital lobe	Tumour at junction of posterior and descending horns	Operation; tumour at junction of posterior and descending horns.
2	"	None; no localizing signs	Tumour—posterior fossa	*Post mortem:* tumour posterior fossa, cerebellar.
3	"	None; no localizing signs	Tumour—posterior fossa	Operation: cerebello-pontine tumour.
4	"	Tumour—occipital lobe	No tumour	Living two years after; symptoms not changed.
5	"	Tumour—Rolandic area	Tumour involving body lateral ventricle	*Post mortem:* tumour internal capsule.
6	"	Tumour—frontal lobe	Tumour involving anterior horn	*Post mortem:* tumour bulging into anterior horn.
7	"	None; no localizing signs	Tumour occluding anterior horn	Operation: tumour frontal lobe
8	"	None; no localizing signs	Tumour—posterior fossa	*Post mortem:* sarcoma meninges posterior fossa.
9	Unsuccessful; too little air	Pituitary	—	*Post mortem:* pituitary tumour.
10	Unsuccessful; ventricle not found	None; no localizing signs	—	*Post mortem:* very large cerebellar cyst; ventricles displaced upwards.
11	Unsuccessful; ventricle not found	Cerebellar tumour	—	*Post mortem:* dumb-bell tumour in Meckel's cave and posterior fossa.
12	Unsuccessful: too little air	Tumour—Rolandic area	—	Operation: no tumour found.
13	Successful	Hydrocephalus	Communicating hydrocephalus	Operation: communicating hydrocephalus.
14	Unsuccessful: tapped superficial cyst	Tumour—occipital lobe	Cyst in temporal lobe	Operation: tumour and cyst in temporo-parietal region.

Cases 2 and 8 died after eight and fourteen hours respectively, and Case 10 died on the operating table.

Of the nine cases in which air was introduced successfully into the ventricle, four had no localizing symptoms; in each of these an accurate localization was obtained by ventriculography. One case had the symptoms of a tumour, but both ventricles were normal in shape and size, the subsequent course of the case has confirmed the radioscopic diagnosis. In the remaining four cases ventriculography gave more accurate information regarding the position of the growth than did the neurological examination, or exploratory craniotomy.

In five cases ventriculography was attempted but was not successful. In two of these the ventricle was not found because it was displaced from its normal position by a tumour. In two the amount of fluid evacuated was so small that sufficient air could not be injected to show in the x-ray plate. In one the cannula encountered a cyst 2 cm. deep; the fluid was withdrawn from the cyst and air injected. There was no indication for ventriculography when the extent of the cyst could be determined more accurately without it.

Dangers of Ventriculography.

Two of the cases in which ventriculography was successfully performed died. One sat up in bed suddenly eight hours after the injection and fell back dead. He had a large cerebellar tumour. The other died suddenly fourteen hours afterwards; at the *post-mortem* examination an infiltrating sarcoma of the meninges of the posterior fossa was found.

One case died on the table while the cannula was being passed; the ventricle was not found and hence no air had been injected. The pathological condition found was a huge cyst of the cerebellum, which flattened out the medulla and pons and raised the tentorium cerebelli into the shape of a dome. This pressure from below had displaced the lateral ventricle upwards so that the cannula had slipped below it. No lesion of any kind was found along the track of the cannula in these three fatal cases. It is noteworthy that in all three the medulla was grossly deformed by pressure.

Whether ventriculography has been performed or not no patient with symptoms of cerebellar tumour should be allowed to flex his head suddenly as he instinctively does when rising from the recumbent posture. Sudden flexion of the head is often followed by sudden death. My colleague, Mr. A. K. Henry, is about to publish a paper giving the anatomical and physiological reasons for this fact. It is questionable whether these fatalities can really be attributed to the method, as many cases of cerebellar tumour die suddenly; but they were fatalities.

Discussion of the end-results of these fourteen cases has nothing to do with the question of the value of ventriculography. All the cases came too late for effective treatment. Eleven were blind from advanced papilloedema or optic atrophy resulting from it, one had marked choked disc but was not blind, while two had no choked disc.

It is fair to assume that any manipulation is more dangerous in advanced cases than in those coming for treatment early in the course of the disease.

Conclusions.

Ventriculography in my hands when successfully performed has given definite and accurate information regarding the position of intracranial tumours. Ventriculography must never replace clinical methods, but in certain cases it is indispensable. Ventriculography is not without danger, but no treatment or lack of treatment is without danger in cases of intracranial tumour. Ventriculography is not simple, it is not to be attempted without a sound knowledge of the anatomy and physiology of the central nervous system. It requires much patience and minute attention to details. Above all, it must be performed with what appears extreme slowness.

If a competent neurologist cannot localize an intracranial tumour by clinical means, it is reasonable to put the possibilities—and the risks—of this method before the patient. It is also reasonable to assume that the risks will diminish with increasing experience. The alternative to accurate localization is death.

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II.—GEOFFREY JEFFERSON, M.S., F.R.C.S.,
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No one can deny a careful consideration to any method which will allow increased accuracy in the localization of cerebral tumours. It is claimed that in ventriculography (or "cerebral pneumography" as its inventor, Dr. Dandy of Baltimore, now calls it) we have such a method. Our purpose in this discussion will best be served, perhaps, by examining the question under three headings: First, what is claimed for ventriculography; second, from a consideration of the general physical characters of intracranial tumours what help might we be justified in expecting from it; thirdly, my own experience of the matter.

I.

First, then, what is claimed for ventriculography? By the replacement of intraventricular cerebro-spinal fluid by air and subsequent x ray we are able to obtain the outline, the shape of the lateral ventricles. With good technique the size and contour of the ventricles can be quite clearly seen in the majority of cases, and when a tumour is present changes in ventricular size, shape, and position give valuable information. It is claimed that the

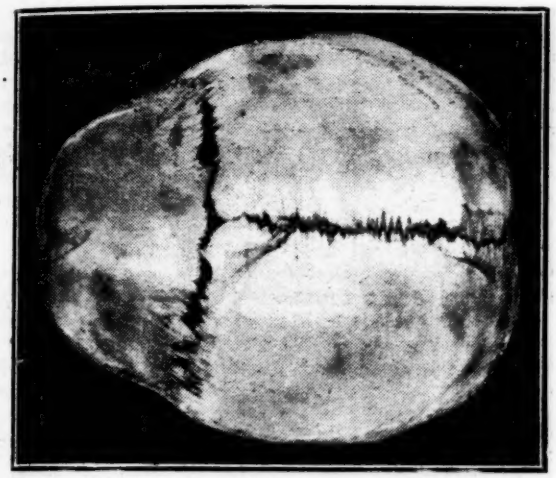

FIG. 1.—Calvarium of a child from a case of cerebellar tumour, showing effects of obstructive hydrocephalus.

vast majority of intracranial tumours (excluding the sellar and suprasellar group, in which help of this kind can rarely be needed) can be correctly localized by these means, aided by the physical signs elicited in the usual way. Dandy states that neurological examination alone fails to localize the tumour correctly in more than 50 per cent. of cases, but admits that this is a debatable point. It is, in truth, so debatable that nothing but mutual recrimination is likely to result from the pursuit of this question. Obviously the percentage of correct localization by purely clinical means will vary in different hands according to the skill of various clinicians. In this connexion the time element is of some importance. A larger proportion of accurate localizations will be made the longer the cases are watched, for a tumour which lies in a silent area as it increases in size often comes to involve eventually important structures and so gives unequivocal localizing signs. But if we are to wait we must remember that late cases of brain tumour are by no means such good surgical risks as the early ones. It is in cases where the precise location of the tumour is doubtful or where (more rarely) its position is frankly not known, that ventriculography would have its greatest utility.

II.

The information obtainable by means of ventriculography depends primarily on our recently acquired knowledge of the secretion of the cerebro-spinal fluid and the pathways which it follows. We know that any obstacle to the flow of the cerebro-spinal fluid from its point of secretion in the choroid plexuses to its absorption through the arachnoid villi into the venous sinuses will result in an obstructive hydrocephalus. As far as concerns tumours we may say that posterior fossa tumours will generally give rise to bilateral ventricular dilatation. Most pathological museums contain specimens which will be found to illustrate this fact. Figure 1, which I show by the courtesy of Professor Shaw Dunn, is from the Pathological Museum of the University of Manchester, and represents the calvarium of a child with the sutures widely open. No record of the case exists save the written inscription, "Cerebellar tumour."

We can, however, in some measure, reconstruct the progress of the case from this specimen and see how the tumour blocked the exit of cerebro-spinal fluid and gave rise to a slowly increasing internal hydrocephalus, great enough to expand and thin the skull-cap and open the sutures. The mechanism of production of this hydrocephalus is usually either by crowding of the cerebellar lobes on to the roof of the fourth ventricle, so interfering with its permeability, or by occluding the foramina of Luschka and of Magendie. Alternatively the tumour may kink or rotate the cerebro-spinal axis or otherwise interfere with the free passage of cerebro-spinal fluid (as in Figure 2, a cerebellar tuberculoma). Speaking generally, when we have a bilateral internal hydrocephalus we have very strong evidence that the tumour is in the posterior fossa and must be sought there. Tumours of the mid-brain

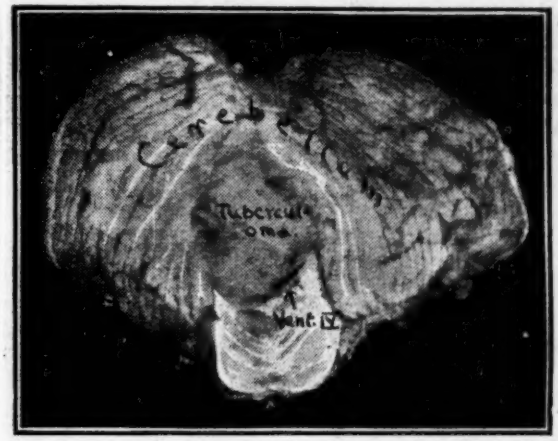

FIG. 2.—Tuberculoma of cerebellum, showing distortion of the fourth ventricle.

and pons will also frequently block or distort the aqueductus sylvii but they do not (save the rare pineal growths) give much difficulty in localization. This obstructive hydrocephalus may give rise to expansion of the floor of the third ventricle, to opening up of the sella turcica or actual erosion of the dorsum sellae, and to minute hernial protrusions through the dura, examples of all of which I have personally seen. Now as regards tumours of the hemispheres. It may be asked what happens to the lateral ventricle when a tumour is situated in a hemisphere. It is obvious that a hydrocephalus will no longer result, rather the reverse. An examination of pathological specimens soon discloses the fact that most hemispheral tumours cause a dislocation and often a deformity of the corresponding lateral ventricle. This is clearly seen in Figures 3 and 4. In the former, one ventricle is seen to be almost obliterated by a large glioma; the other is rather larger than normal, possibly because the tumour has embarrassed the outflow from the opposite ventricle at the foramen of Monro. The ventricular distortion is extreme in this case, but varying grades can be seen in other cases. [Further lantern slides were shown illustrating these points.] When a tumour is present it is the rule for the hemisphere containing it to be larger than its fellow. This increase in size is not due as might be thought purely to the additional mass given by the growth itself, but is due in addition to secondary oedema. This point is a most important one and has not, I think, previously received much attention. It was first brought forcibly to my notice in the case of a man who died rapidly in coma without any operation being performed. At the autopsy, which I performed myself, a small tumour

was found in the upper right parietal field, but the whole right hemisphere, which had been hardened *in situ* before removal, was greatly larger than the left. Figure 4 represents a coronal section through this brain, 1½ inches in front of the tumour. It will be noted that the right hemisphere is very considerably larger than the left although no tumour is present in the section. The amount of secondary oedema present varies from case to case, but it no doubt accounts for the high pressure met with in some cases where the actual growth is small. This is not the occasion to pursue this matter further; from our immediate point of view we see that the tumour, with the oedema, reduces the size of the ventricle and tends to dislocate it towards the opposite side, a process which is somewhat restrained by the pressure of the falx. From this brief general consideration of the physical characters of tumours of the brain one would infer that if we could in life get an estimation of the ventricular size and shape and position we should possess very valuable diagnostic or corroborative evidence.

III.

My personal experience of ventriculography is limited to six cases. On one of these injection was practised twice, both times with a negative result, but without harm to the

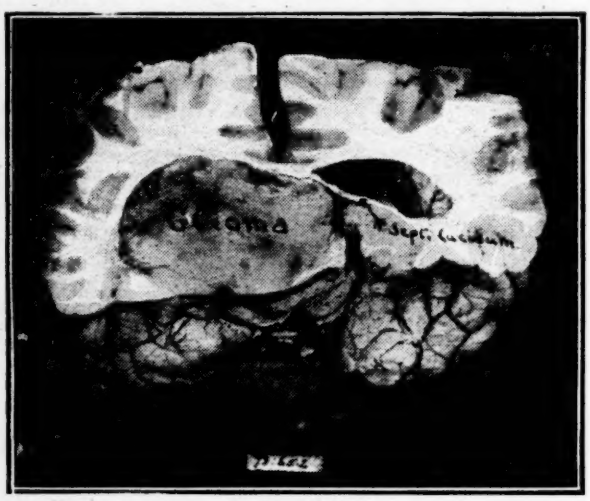

FIG. 3.—Glioma of the left hemisphere, distorting and obliterating the left ventricle. The right ventricle is large and pushed over towards the right.

patient. I have had one death and that was in the case of a hydrocephalic child in an advanced stage of the disease. In this case I replaced 80 c.cm. of cerebro-spinal fluid with 80 c.cm. of air. A good picture was obtained of the dilated ventricle with air in the posterior fossa, proving it to be an example of "communicating hydrocephalus." The child died two days later, but it was already so far progressed in the disease that death at any time, with or without ventriculography, would not have been surprising. I should hesitate to use ventriculography again in a case of hydrocephalus in a child, as it is unnecessary. The case of which I speak was done two years ago. At the present time I think that the required information can be obtained by the use of dyes and suitable punctures. In the other five cases no untoward symptoms occurred. Valuable information of a corroborative nature was gained in two of these cases, in two it was not a help, and in one only was a positive diagnosis obtained by its means. A full account of this case is given below.

CASE.

A young woman, aged 23, was referred from the Manchester Royal Eye Hospital, with papilloedema, and admitted to the Salford Royal Hospital on August 23rd, 1922. The patient had had headache and sickness for the previous two months. There were no previous illnesses of note. The patient was small, fairly bright, a "good witness."

History.—In the middle of June she began with what the family took to be neuralgia at the back of the head and left temporal region, also tinnitus in the left ear. She vomited severely at times. She had had slight malaise previously, but a severe headache came on in the street bringing vomiting in its train, and her companions had difficulty in getting her home. This was the first thing that made her relatives think that there was anything seriously amiss; she improved with two weeks' rest. She went to the Royal Eye Hospital because her eyes troubled her. She was admitted there next day and was an in-patient for seven weeks, during which time she improved. Her sight used to go for two or three minutes and then suddenly improved again. She said that she felt very weak, and she was rather anaemic. She had no headache lately; it was previously mainly occipital, a little pain at back of eyes. She had not vomited lately. There was no nausea. She was dizzy, occasionally, but had never fallen. Her memory was very fair; she was always rather a slow girl, and found brain work more of an effort than it used to be. She was never drowsy, but sleeps well. Her temper was not good, not changed. She never lost consciousness, no twitching. There was no palsy, no tendency to fall in any particular direction.

Examination.—The pupils were normal, 1/4 inch to 1/3 inch equal. The palpebral fissures were normal; there was no squint, no ocular muscle palsies, no nystagmus. She had a slightly exophthalmic appearance, and a rather dusky look about the eyes. The cranial nerves, 1 to 12, were normal on both sides. There was no expressional palsy of face, no diminution of hearing on either side. Bilateral choked discs were present, the disc edge not visible, some striation, no haemorrhages, the vessels' exit not visible. Visual fields: there was concentric contraction which varied on different occasions. In regard to the arms, the grip was normal, equal, and there was very fine tremor (the patient seemed very nervous) The tendon jerks were active on the right, less so on the left. There was no paresis in any muscle group. The patient here stated that she had lately found her right hand go dead on several occasions without apparent cause.

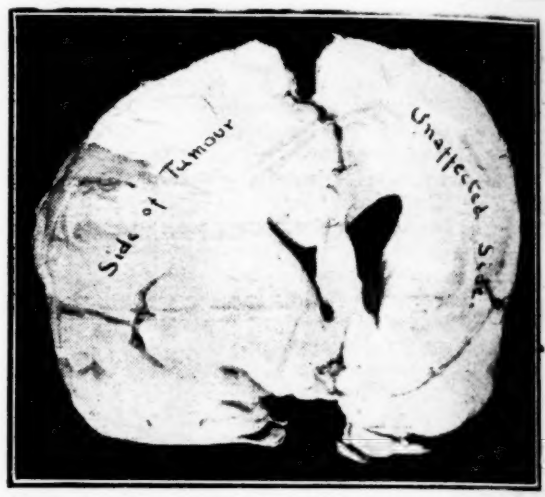

FIG. 4.—Brain cut across 1 in. in front of a tumour, illustrating the ventricular distortion and the large size of the ipsolateral hemisphere compared with the unaffected one.

She was fortunately seen during one of these spells; no paralysis and no anaesthesia were detected—the condition was purely subjective. Finger-nose and finger-finger tests were well done. Rapid pronation-spination was badly performed on both sides. Bárány's deviation test was normal. Muscle tone in the arm was not decreased; in the legs it was increased. She walked fairly well, the motor power was good, there was no definite ataxia. The knee-jerks were active, clonic on the left but not sustained; there was no patellar clonus. Tonus was increased definitely, but not obviously in one leg rather than the other. Plantar reflex, right and left, was flexor. Oppenheimer's test was negative. The heel-knee test was well performed, but movements were rather abrupt in both legs. In regard to sensation, there was recognition of a brush all over body, normal localization on the hands and arms. In regard to the joint-sense it was normal in the fingers and elbows on both sides. The positional test was normal. The patient now stated that she thought she had had some headache for ten months; it was worse in the morning, vertex and frontal, worse lying down; vomiting did not relieve the headache but occurred (as is usual with increased intracranial tension) when the headache was at its worst. The Wassermann reaction was negative. The urine was normal. After lumbar puncture in the centrifugalized deposit, an odd small lymphocyte was found. With the perimeter both fields were charted, and concentric contraction was more marked on the left than the right, but nothing of outstanding interest was discovered.

Here, then, was a case with definitely increased intracranial pressure, believed to be a cerebral tumour. Localizing signs were absent. The attacks of numbness in the right hand pointed to the left hemisphere, but a careful examination on several occasions and by more than one person failed to reveal any physical signs to substantiate this. It was therefore decided to perform ventriculography and this was accordingly done on October 8th, 1922, 35 c.cm. of cerebro-spinal fluid being removed by ventricular puncture at Keen's point and air replacement carried out by Dandy's technique. *X* rays revealed a definite internal hydrocephalus. A ventriculogram (antero-posterior view) shows the two ventricles quite symmetrically dilated and rules out the possibility of a hemispheral growth. A subsequent exposure of

the posterior fossa revealed nothing but adhesions, which were dissected away; the patient made a good recovery and remains well up to the present.

The method is not without danger, particularly, I think, if large amounts of air are used. I doubt whether it is necessary to inject more than 25 c.cm. of air, and my own inclination is to use small quantities and outline the horns one by one. There are of course fallacies in doing this, and considerable skill is necessary in interpreting the results. At times I have no doubt even the most skilful will fail, but interpretation will be easier if the considerations brought forward as to the physical characters of tumours and of their resulting oedema are kept in mind. Some fatalities after air replacement in the ventricles may perhaps be explained by the tide of cerebro-spinal fluid rising faster than the absorption of the air. There is nothing to show that air injection stops the fluid secretion, and a stage of embarrassment may quickly be reached in some patients. Such cases should be repunctured and fluid and air allowed to escape. If this view be correct small quantities of air should be much less dangerous than large, although it is certain that large quantities have sometimes been used by surgeons without ill result.

In conclusion, we may say that the method is one which shows promise of considerable value, and is, I think, worthy of very serious consideration. But it is more likely to be retarded than helped by indiscriminate enthusiasm. It should only be employed after the most meticulous clinical examination has failed to make quite certain the exact position of the tumour, and in view of the difficulties of interpretation sometimes encountered I should trust neurological signs rather than the *x* ray when the two are at variance.

DISCUSSION.

Mr. Percy Sargent (London) said that his own experience of a few trials led him to think that the principal difficulty lay in the interpretation of the radiograms. The method was not free from danger and was difficult. But while this was true we had no right to dismiss the matter altogether from amongst the means of diagnosis. He would be sorry to accept the figures that only 50 per cent. of brain tumours were localized by the neurologists. His experience was that the proportion was very much higher. He took the opportunity of mentioning to the Section a method of localization of tumours of the spinal cord by injection of a substance known as lipiodol followed by *x*-ray photographs. (See Journal, August 4th, p. 174.)

SECTION OF ANAESTHETICS.

William Joseph Essery, C.V.O., M.B., President.

ANAESTHESIA FOR CHILDREN.

BY

HAROLD SINGTON, M.D., M.R.C.S., L.R.C.P.,

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I should like to preface my remarks by expressing the gratitude I feel to all my colleagues at the Hospital for Sick Children, Great Ormond Street, to whom I owe so much, for the advice and assistance they give so willingly to the anaesthetists. No one realizes more than the surgeon to what an extent successful surgical procedure is dependent on the choice and administration of the anaesthetic, and at Great Ormond Street the happy relationship that exists between the operator and the anaesthetist has always been a large factor in the advance that has been made in our art.

I shall endeavour to deal with such points especially as may be of value to the anaesthetist who does not limit his practice to this specialty only, and have thought it would be best to review the whole procedure of the anaesthetist from the time that an operation is suggested for the child down to the time when he or she regains consciousness, when the anaesthetic has been eliminated by the usual channels, and when all danger from the anaesthetic point of view has ceased; and, while reviewing this procedure, to lay stress on those practical points which the experience of years has shown to be of the utmost value and which I particularly wish to emphasize. This course will naturally lead to:

(*a*) The consideration of the preparation of the patient.
(*b*) The choice of the anaesthetic to be used.
(*c*) A few points on the administration of the "anaesthetic of choice."
(*d*) Some suggestions for making the recovery as free from discomfort as possible.

Preparation of the Child.

Primarily one must lay the greatest stress on the fact that anaesthesia can be induced only by putting into a patient, in one form or another, a drug which at all times is a poison, the toxicity of which has always the latent possibility of doing considerable damage and even of producing a fatal issue. So we must keep in mind that the function of the anaesthetist is not only to render the child unconscious and impervious to pain in such a manner as to allow a surgical procedure to take place without injury to the central nervous system, but that it should be done in such a manner as not to cause undue toxicity to the system. To ensure this we have to take care that the general condition of the child is such that he is in the best possible state to "take" the anaesthetic.

We all know that disease in the child is a thing apart. Pathological stimuli produce modified results as compared with the adult. For example, infection with pneumococci in the adult will produce a lobar pneumonia, whereas in the child the septicaemic aspect is more likely to predominate, with multiple lesions in various organs, joints, peritoneum, etc. In other words, the effects of disease or poison are profoundly modified by the nature of the growing tissues; and the point for us to remember at the moment is true of the stimuli of anaesthetics. The child is a more delicate organism than the adult, and the growing tissues are more susceptible to the profound intoxication of anaesthetics as well as other poisons. So we, as anaesthetists, must take every precaution to prevent the presence of any degree of avoidable toxicity in the child before we attempt to give an anaesthetic—which is itself a poison.

For example, the patient's resistance must not be reduced by the administration of aperients or purgatives—for what could be worse than to introduce a poison into a system already weakened by frequent actions of the bowels, or to add the poisons due to absorption from liquid faeces in the intestines and colon to those which the anaesthetist proposes to administer. Therefore do not continue that ancient fetish of purging your patient before operation. Even in an operation where it is essential that the pelvic colon should be empty, still insist that an aperient should be withheld. A rectal washout is all that will be necessary to enable the surgeon to perform his operation, and I have yet to hear an operator make the complaint that the rectum is full and hinders his manipulations.

The presence of poisons already existing in the child may be further detected by examination of the urine, so that it is of the greatest importance that the urine should be examined completely in every case, no matter how trivial the proposed operation may be. The points which indicate the presence of a poison, and which are to be noted, are the following.

1. *Carboluria.*

This is by no means uncommon. It is, of course, due to absorption of carbolic acid through the skin, and occurs in those cases where carbolic fomentations, or even cold compresses of a weak solution of this antiseptic, have been applied. When absorption has taken place the urine has a most distinctive appearance. When first voided it will probably be greenish in hue. On standing it darkens and eventually may become black, due to oxidation of hydrochinon, a derivative of phenol. When carboluria is present the anaesthetic must be postponed.

2. *Acetonuria.*

This is of such vast importance that I intend to deal with it in detail—its cause, the history of the discovery concerning its intimate relations to anaesthesia, and the means to avoid it. It is such a danger signal that in every case when acetonuria is detected medical treatment

of the child is essential before an anaesthetic can be administered.

Acetonaemia may be defined as a disturbance of metabolism which is manifested by the excretion in the urine of acetone, aceto-acetic acid, and β-oxybutyric acid. It is undoubtedly more readily produced in children than in adults. Down to the time of Frew's investigations the condition was chiefly recognized in adults in connexion with diabetes, wasting diseases, and starvation. In the adult it was known that acetonaemia was induced by abstinence from, or deprivation of, food, or by elimination, or by carbohydrate starvation. We know now that acetonaemia may be induced in children by very trifling causes, and, in its slighter form, may result from apparently insignificant changes in the dietary. Dr. R. S. Frew examined the urines of all the children in the Hospital for Sick Children, both medical and surgical cases, from the day of their admission over a considerable period of time. None of these had acetonuria on admission (I am excluding the diabetics), but no less than 62 per cent. of them showed the presence of acetone in the urine during the three or four days following admission, and it had no obvious relation to the disease from which the child was suffering; the maximum of the action occurred, on an average, thirty-six hours after they had entered the hospital. The babies under 1 year of age and the older children showed the reaction to a lesser extent than those between 2 and 6 years. But in all cases it cleared up within a week. Frew attributed the temporary acetonuria to the change of diet and a temporary loss of ability to assimilate carbohydrates, but chiefly to the fact that the standard hospital diet contained relatively less carbohydrate than the children had at home. It was further explained by the relative immunity of the infants when they were fed exclusively on milk, both at home and in hospital, and confirmed by the condition being absent in the children from 10 to 12 years of age, when their diet in hospital more nearly approximated to that in their own homes. Frew further found that when a child had glucose added to the dietary from the time of admission the acetonuria did not occur.

It would be well here to describe the clinical aspect of acetonaemia, for it is an especially frequent occurrence in children after anaesthetics have been administered. It also occurs in pneumonia, in cases where large doses of salicylates have been given, in cyclical vomiting, and, of course, in diabetes. Slight cases may occur where there is no symptom, and only detection by a urinary test can elicit its presence. But in its severer form the symptoms are, in order of their frequency, vomiting, increased pulse rate, restlessness merging into excitability and delirium, air-hunger, and sunken eyes; later, acetone can be detected in the breath, black urine is voided, and collapse occurs as a final issue.

Looking back on the years before this condition was recognized one can remember cases that died after anaesthetics with the above sequence of events; and so our deepest gratitude is due to Frew's work, which has enabled us to prevent its occurrence by administering glucose before operation, and by abandoning that custom, now happily relegated to the past, of starving a child before an anaesthetic is to be administered. It also has enabled us to counteract the symptoms when they do occur by increased administration of glucose, by the mouth where this is possible, and in a 5 per cent. solution of glucose in saline per rectum as well.

The striking *post-mortem* feature of the fatal cases of acetonaemia is the change shown in the liver. To the naked eye the cut section of the liver is pale, and the surface is oily. Microscopically there is marked fatty degeneration of the cellular elements.

The functions of the liver cells are still far from accurately known, but it is becoming more clearly recognized that they are of prime importance in relation to body metabolism, and the profound changes met with in acidosis are convincing evidence of this. It would appear that the liver is the great storehouse of the body fuel reserves, and, at the same time, the "quartermaster" controlling their distribution. Certain conditions serve to deplete the storehouse, and the "quartermaster's" functions are sadly disturbed.

As to the practical application of this to our everyday work of administering anaesthetics, one feels that this aspect of children's surgery is not sufficiently recognized, and I am convinced that much discomfort and danger to children can be avoided by attention to it. The fatal cases are usually noted, but the tragedy is that once the severe symptoms have actually arisen, the march of events is apt to be dramatically rapid, and any treatment unavailing. The successful tackling of this danger is dependent on prevention, or, at least, on early recognition. In the old days, before the condition was recognized as acetonaemia and acidosis, the symptoms were said to be due to "delayed chloroform poisoning," and in textbooks to this day the *post-mortem* appearances of the liver will be found under that heading; but we now know that the true cause is carbohydrate starvation, and find that it can occur after the administration of ether as frequently as after chloroform, and even after spinal analgesia.

Preventive Measures.

1. When acetonuria is present the operation must be postponed until treatment has cured the acetonaemia, because this condition is seriously aggravated by an anaesthetic.

2. All cases prior to being anaesthetized should have glucose as a routine measure for at least two days before the operation, and should continue to have the glucose administered as an after-treatment.

3. The patient must not be starved before operation.

4. Aperients or purgatives must not be given before operation.

In all cases before the administration of an anaesthetic a hypodermic injection of atropine sulphate should be given. The dosage, according to age, is:

During the first six months of life	1/400 grain
During the second six months	1/200 "
During the second year	1/150 "
From 2 years of age upwards	1/100 "

A smaller dose than this is inadvisable. The child tolerates atropine well, and it is essential that the narrow airway should be free from secretions. It is most efficacious when administered half an hour before the anaesthetic is started.

Morphine is a dangerous drug for children, and my only advice concerning it is that it should never be used before administering an anaesthetic to a child.

Choice of the Anaesthetic.

So much has been said and written concerning the comparison in value and safety between chloroform and ether that I do not intend to go very deeply into this now. Suffice it to say that, at the Hospital for Sick Children, Great Ormond Street, we have come to the conclusion, without any manner of doubt whatsoever, that for children ether (preceded by a hypodermic injection of atropine) will always be the "anaesthetic of choice." The comparative safety of ether administration over that of chloroform is enormous.

The conditions met with in adults that contraindicate ether, such as brittle arteries or very high blood pressure, are not met with in children. The only condition where chloroform should be given instead of ether is when a cautery—electric or Paquelin—is to be used, and owing to the inflammability of ether that anaesthetic has perforce to be avoided.

A point to be remembered concerning the inflammability of ether vapour is that care must be taken that a naked light of any kind must be excluded from the room, because the vapour seems to permeate to a distance surprisingly remote from the anaesthetist or his table. The anaesthetist must always be alive to this real source of danger. When there is a fire in the grate, as must often happen at "private" operations, the anaesthetist should always take up his position with his belongings as far away from the fire as is possible; and he should never omit to take the precaution, which is absolutely necessary, of hanging a wet towel or sheet in front of the fire so that the ether fumes may not reach it. Should he have that most unpleasant experience of being in an ether fire, it is well to

remember that the best extinguisher is sand. He must not hesitate to puncture that sand-bag which the surgeon is going to use and scatter the sand over the flames! But I hope you will never see this really alarming danger.

Ether is the ideal anaesthetic for the operation for complete removal of tonsils and adenoids. No chloroform should be used. After the child has been deeply anaesthetized by the open method, anaesthesia is easily maintained by means of pumping air, or passing oxygen, through a Woolf's bottle containing ether. This method has reduced the anxiety of the anaesthetist to a minimum. As this is the operation most frequently performed upon children, I must not omit to mention it and most strongly urge the use of this method. Ethanesal seems to cause less salivation than other ethers, and I can recommend it for this particular operation.

The operation for which gas and oxygen is a peculiarly well suited anaesthetic is that for congenital hypertrophic stenosis of the pylorus. This baby is emphatically a starved infant, and his liver must obviously be predisposed to anaesthetic injury. Certain of our early cases died, twenty-four to forty-eight hours after operation, with vomiting and collapse, and, *post mortem*, extensive fatty degeneration of the liver was found. Now the Rammstedt operation lasts only from five to ten minutes, so that the amount of anaesthetic absorbed must be very minute, but such is the delicacy of these starved infants that it was apparently sufficient irretrievably to damage their liver and to determine a fatal result. These operations have been performed with a far greater degree of success when gas and oxygen have been administered. Operations for intussusception also seem to do best under gas and oxygen. In the following tables I have summarized the results of all the operations for these two conditions which have been performed at the Great Ormond Street Hospital during the last four years, 1919 to 1922 inclusive, stating the anaesthetic administered.

Congenital Pyloric Stenosis.

Anaesthetic.	No. of Cases.	Deaths within 24 hours.		Deaths within 48 hours.	
		Cases.	Per cent.	Cases.	Per cent.
Chloroform and ether, or ether	35	6	17.1	9	25.7
Gas and oxygen	43	5	11.6	5	11.6
Local	10	2	20.0	4	40.0
Local + ether	3	0	—	1	33.3
Local + gas and oxygen ...	1	0	—	0	—
Spinal	1	1	100.0	1	100.0

Intussusception.

Anaesthetic.	No. of Cases.	Deaths within 24 hours.		Deaths within 48 hours.	
		Cases.	Per cent.	Cases.	Per cent.
Chloroform and ether, or ether	54	16	29.5	17	31.5
Gas and oxygen	25	5	20.0	5	20.0
Spinal	2	2	100.0	2	100.0
Spinal + ether	1	0	—	0	—
Local	1	0	—	0	—

These tables certainly point to the advantage to be gained by administering gas and oxygen, and I am inclined to consider it the best anaesthetic for these cases. At present one cannot be more didactic on the subject of gas and oxygen, but perhaps at a later date a more definite statement may be made as to the use of this anaesthetic in a wider field.

Ethyl chloride is a particularly useful anaesthetic for dental extractions in children, and I say without hesitation it is always the "anaesthetic of choice" when several teeth have to be dealt with. The only qualification I have to make concerning its use is that, owing to the muscular spasm which it causes, there may be a little difficulty in holding the jaw forward. This difficulty is easily overcome; but it is of the utmost importance that a free airway should be maintained, and any anxiety that the use of ethyl chloride may have caused has been invariably due to an insufficient intake of oxygen. My experience in many thousand administrations without the least anxiety enables me to make this statement with confidence.

The embryonic state of the central nervous system in early life renders it possible for operation to take place without an anaesthetic if the tissue involved is also insensible; and I refer to the practicability of the rapid circumcision in the first two or three weeks of life. But such a procedure is possible only during that short period. The central nervous system develops rapidly in the early months, and, apart from the minor procedure referred to, the practice is to be deprecated.

Administration of the Anaesthetic.

No severe shock or strain to the central nervous system of a child should be lightly undertaken. Our art should ever be gentle and human; our aim with all our patients should be to make their memories of operations and similar awesome procedures as pleasant as possible. Some degree of apprehension unfortunately is a necessary preliminary to operations; and this exists in the child's mind too, often at a surprisingly early age. In the child, happily, it is usually a simple fear of pain, and the feeling is usually allayed by means of tact and that quality which can only be described as "child understanding." We all know what splendid patients children make so long as they approve of us, and so long as they are not asked to suffer discomfort unreasonably. Always explain. Never deceive.

It has been my unfortunate lot to see many children who have suffered severe shocks from the terror due to a rough administration of an anaesthetic, or to an operation performed under "deceptive persuasions" rather than a properly administered anaesthetic. I verily believe that many of those children will have suffered permanent nervous damage, and certainly they will never again trust anyone approximately resembling a doctor. The blessed gift of unconsciousness should never be needlessly withheld from any of our patients. "But," you will say, "there is considerable nervous shock involved in the reception of an anaesthetic." True; but I want to try to make a few suggestions which will enable you, with tact and skill, to reduce that unpleasantness to a minimum. Gentleness and understanding are the most necessary of all the possessions of a children's anaesthetist. A small child, unless frightened, is a most reasonable individual, and will accept and appreciate suitably worded explanations of the funny things that are about to be done to him. He should not have the initial fright, when entering the room or theatre, of seeing the surgeon's instruments exposed on his table. And I must here warn you against acceding to the oft-expressed wish of the fond parents, "Oh, *do* give the anaesthetic to the child in bed, and carry him to the operating room when he is under." It is a most dangerous proceeding, and should be strenuously avoided.

Do not have the child in the room until the surgeon's instruments are ready and all is prepared for the operation to begin. Let the surgeon do the waiting. But do not risk the chance of having the child at that stage of anaesthesia when the surgeon may start, only to find that a delay occurs, and consequently the child has to have more anaesthetic than is absolutely necessary.

When you have helped the child into the required position, coax him, do not force him, under. Explain what you want him to do—namely, to "blow." There are many little ideas which will encourage him; a balloon exhibited, which he may be told can be blown bigger, may persuade him to blow more vigorously. And let him know that by his effort of blowing he will blow the nasty stuff away; for while concentrating on his effort to blow the inspiratory action will pass unnoticed so long as the ether is slowly administered. Put five to ten drops of essence of orange on the facepiece, covered with twelve to sixteen layers of gauze, and tell him it smells of oranges. This essence of orange is made with alcohol, and in half a dozen breaths

(between the "blows") will partly anaesthetize the soft palate. Then slowly drop the ether on, drop by drop, holding the facepiece quite six inches from the face, the end tilted below the chin. Do not hurry the early administration. Always have a small blanket on the chest in such a way that it can be adjusted around the side of the child's head, because the ether vapour is heavier than air, and so will fall below the level of the upper surface of the face, and your endeavour is to try to keep this from escaping below the required level. "Go slow" until you have the child unconscious, then push the anaesthetic further by saturating the gauze with ether and covering up the head with the small blanket that is arranged about his neck. And remember this—always and at all times have a free airway. So long as the jaw is forward and the tongue not back you can hear by the free easy breathing that the airway is good. And so long as the airway is clear the colour must be right.

It must, however, always be borne in mind that the child's air passages are minute compared with those of the adult. On this account there is a smaller margin for error when anything tends to obstruct those air passages. The slightest obstruction to a free airway tends to make the child cyanosed, which means the right heart is being distended, and this cardiac embarrassment is a real danger. So the importance of maintaining a free airway cannot be exaggerated. I would maintain that the sudden death of a child during, or immediately after, open ether administration is generally (if not always) due to the heart strain that has accrued during some part of the operation secondary to an insufficient oxygen intake.

Recovery.

A few points I would mention to render the child's recovery from anaesthesia less unpleasant are the following:

1. A drop of ol. ricini in each eye. The eyelids are so dry and the suffusion of the conjunctiva so evident after lengthy administration of ether, that conjunctival trouble is not unknown, and this will be prevented by the use of ol. ricini. It should only be used after the ether administration has ceased, because otherwise an ethereal oil will be formed which is itself damaging to the conjunctiva.

2. The dryness of the mouth so frequently complained of may be prevented by sponging out the mouth with normal saline immediately the administration has ceased. This is particularly necessary after operations about the mouth—for example, tonsils and adenoids—when it is the coagulated blood on the tongue and palate which, when left, is the source of annoyance to the child, and can be obviated by this means.

3. The highly strung, nervous child will recover from the anaesthetic more quietly, and have a longer sleep after consciousness has returned, when a rectal sedative is given. For a child of 10 years, potassium bromide 20 grains and aspirin 10 grains, in half a pint of normal saline, should be given slowly per rectum before consciousness returns, as soon as the child is put back to bed.

My object has been to draw attention to the above few practical points in the hope that my fellow practitioners may be enabled to help their little patients to take an anaesthetic with safety and with as little unpleasantness as possible.

DISCUSSION.

Dr. A. L. Flemming (Bristol) said that deaths were attributed to ether and to delayed chloroform poisoning which were really due to acetonaemia. With regard to constipation and the use of aperients, certain school children, and more especially anaemic girls of 15 or 16, could have operations obviated or at least delayed until the patient was in a more suitable condition for operation, if, when the colon was loaded, the breath foul, and a diagnosis of doubtful appendicitis made, they were put to bed and purged. In many cases school children were apt to be constipated, and if a purge was not given and the bowel was not emptied before operation they were liable to salivate excessively and to require more anaesthetic than if a purge was given. There should, however, be an interval between the giving of the purge and the anaesthetic. He also asked Dr. Sington whether his cases were anaesthetized by daylight or by lamplight, as there undoubtedly were differences to be noticed in the colour changes under anaesthesia as induced in the presence of different illuminants.

Dr. Wilkins said he failed to understand why Dr. Sington recommended ether for tonsil and adenoid guillotine operations in children, as he personally found gas and oxygen sufficient for a dexterous surgeon, and far better for those unfortunate children who still were operated upon as out-patients.

Dr. C. H. Mott (Burslem) inquired whether cases which developed acetonaemia in hospital cleared up without treatment. He wished to know also whether chloroform was no more dangerous than ether in such cases of acidosis where operation could not be delayed. In his own practice he made use of gas, oxygen, and ether, and he noticed that even with these anaesthetics some cases developed acidosis.

Dr. Henry Featherstone (Birmingham) said he was inclined to believe in an important third factor in the production of acidosis in addition to starvation and drugs—namely, individual idiosyncrasy, which might be an inherited characteristic. He instanced the case of a little girl, aged 4, the apparently healthy daughter of well-to-do parents, whose tonsils and adenoids were quickly removed under a single dose of ethyl chloride. Marked symptoms of acidosis and toxic vomiting appeared within forty-eight hours, and the child died on the third day. In that case the effect of starvation and drugs must have been small, for the patient only omitted her breakfast on the morning of the operation, and milk was given the same evening, while the anaesthetic was quickly eliminated. An elder brother had shown signs of acetonuria a year or two previously. Many thousands of children whose tonsils and adenoids were removed in hospitals were dealt with before a case of this kind was met. He agreed with Dr. Sington that gas-oxygen was the anaesthetic of choice for babies who were to undergo Rammstedt's operation for hypertrophic pyloric stenosis. At the Birmingham Children's Hospital very good results had been obtained, and the last ten cases in the private ward had all recovered. The latter result was no doubt largely due to the early diagnosis and more satisfactory state of nutrition of the infant, but nevertheless the entire series showed a most satisfactory recovery rate. Ethyl chloride was his routine anaesthetic for dental extractions in children, and he anaesthetized about 2,000 such cases in the course of a year. He entirely agreed with Dr. Sington that rapid induction and rapid elimination were the secret of success. Laryngeal stridor or lingual obstruction might lead to some signs of shock and to after-vomiting.

Dr. L. A. Moore (Bristol) asked for details with reference to the administration of gas and oxygen to children, and whether ethyl chloride was advisable as a prelude to ether induction.

Dr. Sington, in reply, said he was glad that the subject of acidosis and constipation had been so freely touched upon. In his opinion poisoning due to liquid faeces was rather different from that due to hard faeces. Toxicity due to liquid faeces was much more serious than that due to hard faeces. Purgation should, therefore, be employed with great care, and if possible some time before the operation was undertaken. The child would stand a better chance if operated upon in a constipated condition than if its colon was full of liquid faeces the result of purgation shortly before. He then answered the questions asked by his critics in detail.

FATALITIES FROM ANAESTHETICS.

BY

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Statistics of deaths under anaesthetics are generally so lacking in essential details as to be of little use for guiding us in our practice. After examining quite a large number of these reports with the intention of reviewing the

statistics to-day, I decided that it would be more expedient to leave figures alone and to treat the subject from a clinical point of view, and in my remarks I shall endeavour to deal especially with points having a direct bearing on some of the reports kindly sent to me in private correspondence.

During the past fifteen years so much progress has been made in the science and art of anaesthesia, especially in the direction of safety, that we may well feel encouraged to make further efforts in this matter, and the chance of success must be greatly enhanced by the keen interest which the general practitioner is taking in the specialty. It seems reasonable to hope that co-operation amongst members of the profession may, before long, result in a reduction of the total number of these fatalities reported annually by the Registrar-General. For some years this figure has remained almost stationary, although there has been an enormous increase in the number and severity of operations performed annually, and in spite of the fact that old age or feebleness is not allowed to stand in the surgeon's way to the same extent as formerly. In fact, the surgical burdens, if I may use the phrase, which patients are nowadays expected to bear are often so heavy that without improved anaesthesia the mortality would have risen much higher than is the case. If we try to determine in what direction further improvement is most likely to occur, we are handicapped by the lack of detail in the reports of coroners' inquests, and in the usual statistical tables, but with the help of practical knowledge we may, I think, arrive at many useful conclusions.

We may classify anaesthetic deaths according to the time at which they occur—that is, whether before, during, or after operation.

We have, then, in the first group, fatalities caused by the anaesthetic without the complication of other factors such as shock or haemorrhage. A large majority of these cases are associated with the use of chloroform for inducing anaesthesia, and have practically disappeared in those clinics which have adopted the principle of avoiding this drug entirely during induction, or at any rate during the stage of excitement. It seems only reasonable to expect that before very long all administrators will follow this routine and thus rob chloroform of something like 50 per cent. of its immediate danger. The method of using chloroform at the very commencement, and changing to ether before the onset of struggling, imposes certain responsibilities upon the administrator. In the first place, he must be prepared for the very insidious onset of this second stage, which may be indicated only by a slight alteration in the respiratory rhythm or volume, and may be easily overlooked amidst noisy or distracting surroundings. In the second place, it may require considerable determination on his part to resist the temptation to use a little chloroform in order to overcome troublesome spasm, and this temptation is apt to be increased when there is need to hurry. Induction by chloroform is apt to be followed very quickly by a stage of marked muscular relaxation, during which moving the patient from one table to another may give rise—and often has given rise—to fatal syncope.

In consequence of these difficulties we must regard the practice of inducing with chloroform as too dangerous for routine work. In looking for an alternative method of commencing the induction we are apt to forget that ether alone is not intolerable when administered sufficiently slowly, and that ethyl chloride and nitrous oxide are available not only in closed methods; they can be used with the open mask, ethyl chloride being sprayed on, or nitrous oxide being run underneath it.

Our second group of cases—namely, those occurring during the course of operation—is difficult to analyse, consisting as it does of a veritable fabric of factors and a riddle of responsibilities. Fortunately the co-operation between surgeons and anaesthetists is well established and shows signs of vigorous growth, with the result that the patient's power of resistance is seldom overtaxed nowadays. There must always be some difficulty in determining the proportion of blame due respectively to surgeon and to anaesthetist. Take, for example, an instance where shock develops after prolonged and continuous manipulation of intestine, or traction on the mesentery; it is probably true that if the manipulations had been interrupted by pauses for "rest" shock might have been avoided, but the blame for this should be laid at the door of the anaesthetist, provided he has omitted to warn the surgeon that a rest was indicated. Take, as another example, an instance where too tight packing of the abdomen during operation has led to shock or post-operative distension: the surgeon may argue, with some justification, that such excessive packing was rendered necessary by insufficient relaxation, but the anaesthetist may feel tempted to retort that relaxation could have been procured locally by the injection of novocain more safely than by a further saturation of the patient with the toxic anaesthetic. This question of combining local with general anaesthesia is one which needs investigating and calls for close co-operation between workers; a complete understanding on this point might, on occasion, avert disaster.

When a patient, already moribund from illness or disease, dies during operation, it is misleading to attribute death to anaesthesia; it is due to natural causes or perhaps to surgery.

While it is difficult to fix the blame for accidents arising in the second group of cases, it is wellnigh impossible to do so in connexion with the third category, which comprises deaths resulting from sequelae. It is important that the anaesthetist should be notified of any untoward symptom which could possibly be attributed to his administrations, otherwise he will have lost what might have proved a valuable lesson; nor is it reasonable to expect the surgeon to view these complications from the anaesthetist's standpoint. For example, collapse and severe fall of blood pressure will suggest to the former that his operation was too exhausting, whereas to the latter it will probably indicate that saline ought to have been administered more freely, that more frequent halts should have been called during the operation, or that some form of local analgesia might have been employed in conjunction with the general anaesthetic. Again, in the event of chest trouble developing after operation, the surgeon is apt to blame ether when possibly some other factor, such as tight bandaging or strapping restricting the movements of respiration, has been the real cause.

There are many instances of this type which may occur to you, where the factors concerned are so numerous as to make it hard to say in what direction our technique requires revision. It is when these complications are met with that the surgeon may, with the best of intentions, demand some change of method which will lessen risk in one direction but which may increase it in another. I hope we shall soon see every case of sequela made the subject of consultation between surgeon and anaesthetist.

The prevalence of deaths due to chest complications may be increased by our natural inclination to avoid, at all costs, the tragedy of a death on the table; the method which is the safest during operation may be the most dangerous in the long run. Take, for instance, the case of an elderly patient with bronchitis on whom herniotomy is to be performed; he could probably be brought through safely with closed ether, but he would run a grave risk of an acute exacerbation of his lung condition. It is probably sounder to judge of an anaesthetist's capability by his skill in avoiding post-operative fatalities than by his success at the time of operation.

It is evident, then, that the course of progress is not quite so free from "snags" as it may appear to be at first sight, and that some careful navigation is necessary at the point where we find ourselves to-day. As one of the most difficult "snags" we have to negotiate I may mention education. The post-graduate cannot learn much from occasional lectures, and the student is required to devote only a small amount of practical study to the subject of anaesthetics; this, however, is an advance on the conditions obtaining twenty years ago, when it was not uncommon for a newly qualified man with no previous experience to be called upon to give the anaesthetics for the day in his hospital with no one to guide him but the operating surgeon.

There is one evil which seems likely to arise out of the rather vigorous campaign which some authorities, with the best of intentions, are waging against chloroform—that is, that there is a chance that the rising generation of practitioners may be so unfamiliar with chloroform that they will be unable to use it with confidence or safety.

With your indulgence I should now like to revert to some of these points with the object of discussing with you the difficulties which seem to offer most hope of solution.

The danger of syncope occurring during chloroform anaesthesia is now an established fact, and reports of cases leave no doubt that the chief contributory factors are (1) any interference with respiration, and (2) the use of too concentrated a vapour. The first of these may be very obvious and accompanied by cyanosis, as, for instance, when the obstruction to free entrance of air results from faulty position of the jaw or from muscular spasm. Fortunately this type of trouble is easily removed by introducing an airway or by traction on the jaw; but a much more insidious form of faintness may result from the accumulation of mucus or blood in the larynx, which is best got rid of by cough. This cause of faintness may easily be overlooked, and in not a few of the cases reported has ended fatally. In this connexion I am tempted to refer to what seems to me to be a misinterpretation of Goodman Levy's teaching concerning the safety of deep chloroform anaesthesia: in certain instances, when alarming symptoms have arisen, they have been considered an indication for deeper anaesthesia, with disastrous results; but it is certain that the indication is rather to get the airway clear before doing anything else.

We come across quite a number of instances where death has taken place shortly after the patient has been moved from one table to another, or from one position to another. With the excessive relaxation of profound anaesthesia any change of the patient's position may cause a fall in blood pressure, and, in light stages of narcosis, movement is apt to lead to vomiting with its usual faintness.

The concentration of vapour depends largely upon the extent to which the airway is kept free from obstruction.

I am sufficiently optimistic to believe that surgeons and anaesthetists, working together with the common object of trying to conserve as far as possible the blood pressure and muscular tone, will be able to lessen operation risks still further. That the importance of these two factors is now well appreciated in most quarters is shown by many of the letters I have received from anaesthetists personally interested in some of the cases recently reported.

For the sake of clearness I will avoid many words, and simply state what I believe to be the essential facts. When blood pressure falls seriously during manipulation, such as traction on the mesentery, it will generally return to normal, or nearly normal, when the manipulation stops, provided it has not been kept low for longer than fifteen or twenty minutes. It is of the utmost importance that the surgeon should help the anaesthetist as far as possible in this respect. The question of muscular relaxation is, to some extent, a matter of arrangement between surgeon and anaesthetist; too little is bad for the surgeon, but too much may be fatal for the patient. Relaxation of a group of muscles may conveniently be obtained by the injection of a local analgesic; this course enables the general tone to be maintained, which helps very materially to preserve the proper level of blood pressure.

I have come across six or seven instances in which deep anaesthesia was associated with a dangerous slowing of the pulse rate—to between 30 and 40 beats a minute—whereas, in the same patient, the pulse rate remained normal as long as the corneal reflex was not abolished. I feel that in such cases one is justified in refusing to deepen the anaesthesia, and thus probably save one's patient though perhaps losing one's surgeon.

When we come to consider the various causes of death after operations we find pneumonia and bronchitis too much in evidence. In conclusion, I would suggest that improvement in this direction would be enhanced if a large number of anaesthetists could be induced to send reports of any such cases they might meet with, during some definite period, to a committee appointed for the purpose. By this means valuable data should be obtainable from which to estimate the value of different techniques.

DISCUSSION.

Dr. McNamara said that the only criticism he would level against Dr. Flemming's paper was that an undue amount of time had been spent in discussing the miserable questions "who was to blame, and who was not to blame," for these terrible fatalities. The fact was that considering the prevalence of these fatalities where chloroform was used even in the hands of the best experts, and considering also that where ether was used even by non-experts, as in America, there was almost no mortality due to the administration of anaesthetics, those were to blame who used, or allowed to be used, chloroform on their patients.

Dr. Sington (London) drew attention to the question of oral sepsis and the necessity of dealing with this by suitable antiseptic measures being taken before operation. He also pointed out that atropine was usually used in too small doses.

Dr. C. H. Mott (Burslem) asked whether the tight bandaging referred to concerned the chest or the abdomen. Tight bandaging was especially employed after breast cases, and in these cases might do harm by restricting the breathing. He mentioned also that in the taking of blood pressures different readings could be obtained by taking them (1) with the hand at the side, and (2) with the hand raised. Thus readings could only be compared when they were taken with the hand on each occasion in the same position relative to the axis of the trunk. Referring to students not being taught to give chloroform if the ether protagonists had their way, he thought that this might be an advantage except possibly in the case of the professional anaesthetist.

ANAESTHESIA BY THE GAS-OXYGEN-ETHANESAL AND THE GAS-OXYGEN-CHLOROFORM-ETHANESAL COMBINATIONS.

BY

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The aim of all anaesthetists should be so to produce and maintain anaesthesia as to give satisfaction to the operator, safety and a minimum of discomfort to the patient, and reward, and mayhap praise, for the anaesthetist. With these aims in view I have been endeavouring during the last six or seven years to perfect a method which would as far as possible fulfil the necessary requirements, and in the gas-oxygen-ethanesal and gas-oxygen-chloroform-ethanesal combinations I think that we have methods which, when properly employed, will give better results than the majority of us were wont to obtain by other means.

Now, anaesthesia by these combinations entails a little more than the mere giving of the anaesthetic, for, to obtain really good results, attention must be paid to medication prior to the actual administration. Thus I advise a hypodermic injection half an hour before the operation, and the contents of this injection vary with the patient and with the operation—for example, for children I usually order 1/200 grain of atropine to be given thirty minutes before the operation; for the older children, say, from age 14 upwards, I give morphine 1/6 and atropine 1/150 grain, while for adults I prefer the "hyoscine compound A" of Burroughs and Wellcome, and for big strong men their "hyoscine compound B." I have tried a great many variations of these preliminary injections, and find that those I have mentioned give the best results.

In regard to the contents of the "ether" bottle, experience has shown me that to obtain the best results

the contents of this bottle must be varied with the patient and the particular operation. I never use chloroform for children, and rely entirely on gas-oxygen-ethanesal, for I have used this last drug exclusively since its introduction by Drs. Wallis and Hewer, and am perfectly satisfied with it. I may remind you that this preparation consists of detoxicated ether with the addition of 5 per cent. mixed ketones. The research carried out by Dr. Wallis showed, amongst other things, that (1) the chief harmful impurity in ether was methyl mercaptan; (2) absolutely pure ether was not an anaesthetic; (3) ethylene or certain ketones added to pure ether provided a good anaesthetic, which on the average gave better results and less after-effects than ordinary ether. Most of the results obtained by Wallis have now been confirmed by other observers; in spite of some opposition, I consider that ethanesal is a distinct advance on ether.

For the young adults as well as the older people I use a mixture of ethanesal and chloroform in equal parts. I only use chloroform alone in the bottle when the diathermy or other cautery is being used in the mouth.

To those who are not familiar with this method the exceedingly small amount of ether or mixture that is used for a long case—for instance, a breast excision—will be something of a surprise, for it is quite an ordinary occurrence for from one to two drachms to be all that is necessary for the whole operation. It must, therefore, be obvious that an anaesthetic of this nature must entail less strain on patients than if they are given ether or chloroform or mixtures thereof, since we are giving the least possible quantity of toxic drugs. We know that nitrous oxide and oxygen are both non-toxic, and the amount of toxic drug in the mixture is so small as to be almost negligible.

Now for a moment let us turn to the actual administration of the anaesthetic. Having seen that the machine is in working order, that the main taps to the gas and oxygen cylinders are turned on, that the lamp is burning with a small flame against the boss of the reducing valve to the gas cylinder, that the water bottle is filled to the proper level with warm water, and that the "ether" bottle contains such mixture as one desires for the case in hand, the gas and oxygen are then turned on and allowed to bubble through the water and thence to the gas bag in the proportion of approximately 10 to 1. As soon as the bag is three parts full the facepiece is applied to the face and the valve is turned over so that rebreathing starts from the beginning.

In a very short time the breathing will become deep, regular, and almost automatic; as soon as this occurs, by manipulation of the taps on the "ether" bottle the gases are made to pass over the surface of the fluid in that bottle, thus picking up in transit a small proportion of either ethanesal or CE vapour. After a few moments there will be another slight change in the breathing, which will become slightly snoring in character, and now, if the operation is an abdominal or nose and throat one, it is advisable again to manipulate the taps on the "ether" bottle and allow the gases to pass through the mixture, thus picking up a larger dose. By this time the patient is ready for operation, and in the majority of cases after the incision has been made through the skin the taps on the "ether" bottle can be turned back and gas-oxygen alone administered. When anaesthesia has been obtained the proportion of gases is altered to, in general terms, about four of gas to one of oxygen. In this method, as with all others, the airway must be kept open, and I have found that the introduction of an artificial airway greatly assists in obtaining good and quiet breathing.

The anaesthetist must now carefully watch the patient and be on the look-out for any changes in colour and any signs of a too light anaesthesia, such as swallowing or movement of limbs. The colour must be kept pink throughout, and should the anaesthesia be too light the ether tap must be turned on again for a minute or so. The eye signs in this method of anaesthesia are not of very great value, for it is quite possible to have a perfectly still and quiet patient with a brisk corneal reflex. The only eye sign that I consider important is that should the pupil become widely dilated (due, I believe, either to too much gas, or too much mixture, or both), then the bag must be removed from the face, rapidly emptied, refilled with oxygen alone, and again applied to the face; after a few breaths the amount of oxygen can be reduced and gas added as before.

For a great number of operations it is quite unnecessary to give any more mixture, and the remainder of the operation is conducted under gas and oxygen. Given in this way the anaesthesia is excellent both for patient and operator, while the after-condition is extremely satisfactory. The patients readily regain consciousness, and in the majority of cases are not inconvenienced by nausea or vomiting. In addition to this they are rarely, if ever, conscious that they have had anything save gas and oxygen, for they do not, as a rule, have any taste or smell of ethanesal or chloroform. This lack of smell and taste is another point worth bearing in mind, for those working in the theatre—surgeons, anaesthetists, nurses, etc.—do not become impregnated with the smell and odour of ether or chloroform, an important point for their own comfort. I find nowadays that, in using this method, after a long afternoon in a theatre I can leave feeling quite fresh and well, and the atmosphere of the theatre never becomes charged and laden with the vapour of ether and chloroform, as it often did formerly.

Operations such as amputation of the breast, hernias, varicocles, and the like, are quite easily done under gas and oxygen and a very small quantity of either ethanesal or mixture; it is when one comes to the abdominal and nose and throat work that the difficulty begins.

For some time now many of us have been trying to get some combination to act as a really good relaxant for abdominal work. Gwathmey of New York uses a combination of ethyl chloride, ether, and chloroform, whilst McKesson of Toledo recommends a saturation in N_2O. It is hardly necessary to add that, in giving this combination for abdominal work, a certain amount of intelligent anticipation is necessary on the part of the anaesthetist, so that the surgeon may find the abdominal wall quite relaxed when the time for sewing up has arrived.

Let me make this a little clearer: assume that we are operating on a case of appendicitis. The anaesthesia is deepened at the beginning, so that the surgeon may easily find the appendix and bring it outside, but when once it is outside the anaesthesia need not be of a deep character, and so we only give gas and oxygen. Later on, when we see that in a few minutes the caecum will be returned to the abdominal cavity and the peritoneum sewn up, we again deepen the anaesthesia by turning on the mixture for a few minutes, and directly the peritoneum is stitched up we can again return to gas and oxygen alone. My experience of abdominal work done in the manner I have tried to explain is that the patient is infinitely better both during and after the operation when the combination of gas-oxygen-ethanesal-chloroform is given than after any other combination or single anaesthetic that I have so far encountered.

When I first began to use this method for nose and throat work I had nothing to guide me; so far as I knew my friend Gwathmey of New York was the only man who had tried to give gas and oxygen for throat work, and he had only begun, for the war cut his work short in New York and he came over to Europe. I will not weary you with an account of my earlier cases; many of them were failures, and it was only by sticking to it and having such a cordial co-worker in Mr. Harmer, our senior throat surgeon at St. Bartholomew's Hospital, that we have been able to evolve a method which I believe to be an excellent one for this type of operation, and one which is infinitely superior to anything that we have tried before.

Briefly, our technique is as follows: In regard to premedication, children have none, or at the most get 1/200 grain atropine; adolescents get morphine 1/6 grain and atropine 1/150 grain; adults get either Burroughs and Wellcome's "Hyoscine compound A" or "B," according to size. "Hyoscine compound A" contains hyoscine hydrobromide

gr. 1/100, morph. sulph. gr. 1/6, atropine sulph. gr. 1/180; "Hyoscine compound B" contains hyoscine hydrobromide gr. 1/100, morph. sulph. gr. 1/4, atropine sulph. gr. 1/150. The injections are given half an hour before the time of operation. The patient is then anaesthetized with gas and oxygen, and the anaesthesia deepened with ethanesal or mixture until the breathing is deep, regular, and slightly stertorous; the colour should always be pink. The facepiece is then removed, a gag placed in the mouth for such cases as enucleation of the tonsils, and the anaesthetic is continued by means of a tube placed in the mouth.

One of the astonishing things about this method is the small amount of mixture necessary to maintain the requisite anaesthesia. Indeed, in a certain proportion of cases hardly any mixture at all is necessary for the rest of the operation—that is to say, after the facepiece has been removed; after that, gas and oxygen alone is sufficient.

In this connexion I must mention that there is one particular type of case where I have been forced to use chloroform alone as my adjuvant. I refer to cases of diathermy. In our throat department Mr. Harmer is treating cases of carcinoma of the tongue, fauces, etc., with the diathermy cautery, and, I gather, with excellent results. Now occasionally in these cases there is a certain amount of sparking, either accidental or intentional, and so one cannot have any ether in the adjuvant bottle lest there should be an explosion, and must use chloroform.

In a large number of cases the best way to continue the anaesthesia is to pass one or two small rubber tubes through the nostrils, and pass the anaesthetic into the post-nasal or endopharyngeal space; I do this by means of a metal stirrup and tubes.

For operations such as submucous resection of the nasal septum, after anaesthesia has been obtained—and here let me say that in nose and throat work as well as in abdominal work I think that it is essential to get the patient "well under" before the operation begins—an artificial airway is placed in position and the anaesthesia continued by what really is an endopharyngeal method. An airway devised by Mr. Clausen, one of our residents at St. Bartholomew's Hospital, is one of the best I have ever seen; the anaesthetic is delivered at the upper opening of the larynx, and the return air is diverted by a tube away from the operator and anaesthetist.

The results that I have obtained so far with endopharyngeal gas-oxygen-ethanesal have been most encouraging, and I hope in the near future to develop the method still further. The endotracheal administration of gas-oxygen-ethanesal is another recent development of the method, and one that appears likely to be very valuable for work not only in the mouth and neck, but also for upper abdominal cases, since relaxation of the abdominal muscles is readily obtained. Sufficient work, however, has not yet been done with this method to warrant me at this early stage to go into details.

DEMONSTRATION.

Dr. Christopher Mayhew (Southsea) showed a new apparatus of his own invention for administering warmed ether vapour, the chief advantages for which were claimed to be its lightness and portability, the whole of the apparatus, weighing only 1 lb., being capable of being taken to pieces and stored in the warming cylinder.

THE TREATMENT OF HAEMORRHOIDS BY INTERSTITIAL INJECTIONS.

BY

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As great interest has recently been aroused in the treatment of haemorrhoids by injection of carbolic acid, I wish to record my observations and conclusions drawn from a series of 150 cases treated in the Royal and Western Infirmaries, Glasgow, during the past year. These patients were kindly sent by the various surgeons of the Royal Infirmary, and Sir William Macewen permitted me to treat the haemorrhoidal cases in his wards in the Western Infirmary.

The treatment consisted in the injection into the pile of 10 per cent. carbolic acid in liquid extract of hamamelis. During the Annual Meeting of the British Medical Association in Glasgow (1922) the method was demonstrated in Mr. Kay's wards in the Glasgow Royal Infirmary by Mr. Souttar of the London Hospital.

The cases were not selected; all degrees of piles were treated, from the simple internal piles with no prolapse to those with marked prolapse. The class of patient treated consisted chiefly of manual workers engaged in such arduous occupations as mining, engineering, and labouring. The ages of the patients varied from 21 to 70 years. The number of injections needed to effect a cure did not seem to depend on the age of the patient or the duration of the complaint. One patient who had been suffering for one year required seven treatments, another case of fifteen years' duration needed only five. The number of piles present varied, and the greater the number of piles the greater the number of treatments. The size of the piles seemed to have some effect; the larger the pile the fewer the injections. Bleeding usually stopped after the first injection. In only one instance was a second injection required for this symptom, although "bleeding piles" comprised 40 per cent. of the cases. Haemorrhage after injection through the puncture of the needle is slight, and I have not seen a case where bleeding, due to the treatment, required any of the special forms of arresting the haemorrhage described by Dudley D'A. Wright in the second edition of his pamphlet on this subject. Where inflammation was marked no injections were given until this was subdued; if only slight, injections were given, and although the pain following was more marked than usual it was never severe and the piles quickly underwent thrombosis.

Immediately after injection the piles swelled; the mucous membrane over some of them became blanched; and where external piles were also present the external pile corresponding to the internal one injected also became swollen in many instances. In only four cases did the treatment keep the patient off work, the duration of incapacity being two days, three days, two weeks, and one week. In these cases marked prolapse was present, and although the piles were reduced after injection reduction was not maintained and strangulation occurred. In this class of case I now only inject one pile at a time, and insert a gauze pad into the anus with a large external pad firmly retained in position by a perineal bandage. Strangulation has not occurred in the last fifty cases of this series.

The injections were given at weekly intervals, and the average length of treatment was five weeks. The thrombosis produced extends along the veins until they perforate the coats of the rectum. In no case has embolism, peritonitis, or pyaemia occurred, such as has been described by others.

After the first visit the patients returned with great regularity, submitted themselves with every confidence that they were not going to suffer much pain, and all stated that their rectal and general condition had greatly improved after the first injection, their usual expression being, "they never felt better in their lives." Four of them had been operated on for piles, and stated that they would not now subject themselves to operative measures on account of the pain associated with them and the long time they were incapacitated after the operation. Cycling after the injection is not recommended, although one man (a furnaceman) immediately after his injection cycled four miles to his work and after work cycled the same distance home again. The progress of this case was uneventful. In some cases two to three months after the injections small "tags" were noticed where the piles had been. If these were of any size or caused any discomfort they were removed. One case, although the patient stated that he felt much better after the treatment, was rather disappointing; the piles became thrombosed but the sphincters did not regain their tone,

two fingers being easily inserted into the rectum without causing any discomfort. There had been marked prolapse, and this was only slightly improved. His general condition was poor.

Perhaps the most striking case was one where the man had suffered for fifteen years, and it was with some difficulty that he was persuaded to submit to out-patient treatment as he was determined to have the operation performed. For some years he had been forced to wear a support to prevent prolapse of the rectum whilst walking. The mucous membrane was seen to be very markedly prolapsed and several piles were present, the anterior pile being the size of a walnut and the left lateral the size of a very large Brazil nut. The latter after two injections was completely thrombosed and the anterior after three injections. Prolapse soon disappeared, the anal orifice became normal, the sphincters regained their tone, and no stricture of the canal has developed.

Before subjecting a patient to this treatment he should be as thoroughly examined as if a major operation were to be performed. I would strongly insist on this, as the only death with which I am acquainted occurred in a case of advanced Bright's disease. Too much carbolic should not be injected—2 to 5 minims of the mixture is sufficient to inject into a pile at one time—and not more than three piles should be treated on any one occasion. If large amounts of carbolic are injected carboluria may result. Bright's disease, diabetes, pernicious anaemia, advanced cardiac disease, hemiplegia, and epilepsy are all contra-indications.

The advantages of the method are that it is almost painless—some nervous patients (especially women) complain of pain for some time afterwards, but this is very rarely severe; no anaesthetic is required; and the treatment can be carried through from beginning to end without the patient being incapacitated or his daily routine interfered with.

Since completing this series, I have tried the effect of injecting 30 per cent. sodium salicylate into piles. The results of the few cases (40) thus treated are as good as those treated with carbolic acid, but the pain immediately after injection is more severe and lasts longer.

HAEMOPHTHALMUS IN ASSOCIATION WITH TUBERCULOUS FOCI IN THE CHOROID.

BY

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It may be said that the diagnosis of tuberculous inflammation of the middle coat of the eye, assuredly a secondary infection, is a matter of more or less clinical probability. The family history and the personal history of the patient, together with the finding of a tuberculous lesion elsewhere and the exclusion of *Spirochaeta pallida* infection, form, as a rule, the basis of one's etiological belief. There is also that fallible but often trustworthy factor, clinical instinct. Not infrequently the primary focus remains undiscovered; and such aids as von Pirquet's skin reaction and Calmette's conjunctival reaction have not secured the allegiance of clinicians. A diagnostic help that may have unfavourable consequences in this relation is the hypodermic injection of Koch's old tuberculin. Its value is definite only if it be followed by the occurrence of irritation or an increase of irritation in the affected eye. But one cannot foresee how much irritation may arise, and it has happened that such an aggravation of the inflammation has been provoked that neither patient nor oculist was pleased with the mode of confirming the diagnosis.

CASE I.

Miss T., aged 26, had noticed, one week before visiting me, that the left eye was blind. She had lighted a candle in a dark room and, upon turning sideways towards the light, thought it had gone out. She then faced the lighted candle and, by closing each eye in turn, found that the left one was blind. When I examined this eye its pupil was inactive to direct illumination, there was a floating opacity in the vitreous humour, and the disc, which was scarcely recognizable, seemed to be enveloped in a bulky oedema with a streak of haemorrhage on its surface. The floating opacity was situated in the centre of the vitreous and was so delimited as to allow of the red reflex being clearly seen all round it. The blood had been poured out into Cloquet's canal. Towards the nasal side of the disc was seen a patch of choroidal atrophy bordered by a line of dark pigment. The eye was blind. One month later I noted "floating opacities in the vitreous; pale disc indistinctly outlined; periphery of disc slightly prominent; arteries small." After five months the disc had the filled-in appearance, pale colour, and smudged edge of secondary optic atrophy. Immediately adjoining the lower border of the disc and spoiling its regular contour was a flat pale area about one-fourth of the disc's diameter in size. The right eye was normal.

Miss T.'s brother, aged 24, asked me to look at his right eye, which was not as good as the left. Below the right macular region were a sharply outlined, brilliantly white patch (almost as large as the disc) of choroidal atrophy and a tiny ill defined pale nodule alongside it. The visual acuity of this eye was 6/18; the other eye was normal.

Both brother and sister had always enjoyed good health. Miss T. declared herself to be somewhat run down, in consequence, she believed, of her nursing duties during her mother's last illness, which had terminated three months previously from heart failure. Their mother, over 70 at the time of her death, had suffered for years from a bronchial affection, which was said to be of a non-tuberculous nature. A sister of theirs, a child of 13, died of pulmonary tuberculosis.

CASE II.

E. B., a robust young woman of 24, noticed, a few days before coming to hospital, that the vision of the right eye had become greatly impaired. With this eye only shadows could be seen. The vitreous contained a large felt-like mass, which effectively obscured all details of the fundus. It was thought that a dimly seen glistening streak might be a tear in the retina. The other eye was normal. A general examination failed to reveal anything amiss. A differential blood count presented the normal picture. Rest, avoidance of stooping, and 5 grains of calcium lactate daily made up the treatment.

Three years later the patient returned to hospital on account of a simple phlyctenular conjunctivitis.

After her last visit she had remained in bed for one year! The vision of the right eye was 6/12, and of the left one 6/12 (partly). Far forwards in the vitreous chambers were seen floating knots and threads. Each fundus exhibited, at the periphery, the albinotic appearance seen after atrophy of the retinal pigment layer. There was in the right eye a patch of choroidal atrophy, and in the left one a raised focus at the junction of the lower and nasal borders of the disc. Engorged vessels were arched over the prominence.

Very often one sees in chronic tuberculous choroiditis foci in different stages of evolution. Some of the foci will have become atrophic patches, others will be recent, showing ill defined edges and raised forms. In the first case some support was given to the diagnosis of tuberculosis by the family history and the examination of the brother's eye. Both patients gave a negative Wassermann reaction. The phlyctenular conjunctivitis of the second case was not, in a pathological sense, out of place. But perhaps it is best to say that the opinion of the nature of the cases is the result of cumulative clinical impressions.

APPENDICITIS AND INTUSSUSCEPTION IN A DOG.

LYMPHATICOSTOMY FOR SEPTIC PERITONITIS.

BY

JOHN D. MALCOLM, F.R.C.S.EDIN.

THE publication of the following story of the illness, death, and *post-mortem* examination of a puppy may be justified not only as a contribution to comparative medicine, but by the fact that the conditions found raise some interesting general questions.

A terrier, aged 8½ weeks, when seen on November 8th, 1922, was in a state of extreme emaciation with a poor appetite, and hardly any of the liveliness of a puppy. The bowels, which were at first relaxed, later became constipated. Castor oil caused vomiting and loose actions, but did not clear the intestine. There was no abdominal distension nor definite evidence of pain on manipulation. On November 15th and 16th hard masses were felt towards the pelvis. On November 17th an enema induced a discharge of faeces tinged with blood, and death occurred on that day.

Autopsy showed an intussusception involving the last twenty-four inches of the small gut. The peritoneal surfaces at the distal

end of the inverted bowel were inflamed and adherent, and the peritoneal sac contained a little clear fluid. The peritoneum generally, and that of the greater portion of the inverted intestine, appeared healthy. A tube having the position and relations of the vermiform appendix was thickened and distended and fixed in its whole length (two inches) by old adhesions. It was soft and its cavity communicated with that of the caecum through a narrow opening.

This dog obviously suffered from chronic appendicitis and from an intussusception which proved fatal. The conditions were exactly those which might be found in a child. I had, however, some doubts about the teaching and, on consulting *Quain's Anatomy*, I found the following: "So far as is known, the appendix is peculiar to man and certain of the higher apes, and to the wombat" (*Quain*, ninth edition, vol. ii, p. 614). Mr. Powell, the librarian of the Royal Society of Medicine, kindly looked up the authorities for me and wrote that "all the books and treatises we have state definitely that the appendix is wanting in domestic animals."

No opportunity to dissect another dog has presented itself, but a paper recently published by W. A. Costain of Toronto gives evidence that the dog has an appendix. This paper is most interesting. It records that when a ligature is placed on the appendix and the meso-appendix of a dog septic peritonitis follows and is fatal in about two days (*Surgery, Gynecology, and Obstetrics*, vol. xxxvi, p. 365). But if the thoracic duct is ligatured and drained twenty-four hours after ligaturing the appendix, the poison, instead of being taken into the blood stream, is discharged from the body and recovery takes place. A collateral lymph circulation develops, and the drainage fistula heals spontaneously. Dr. Costain tied and opened the thoracic duct, close to its entry into the vein, in the neck of a 9-year-old child suffering from acute pneumococcal peritonitis. No abdominal operation was performed except the removal by aspiration, for examination, of half a cubic centimetre of pus from the right side of the peritoneal cavity. This pus contained pneumococcus IV. Rapid disappearance of all symptoms proved that septic absorption had ended. The abnormal abdominal conditions gradually subsided, and the patient was discharged, cured, twenty days after the operation.

The extraordinary power of the peritoneum to get rid of infection is one of its most remarkable features. Nevertheless septic peritonitis is common, and when definitely established it is usually fatal. Hence a main object of surgeons during the last forty years has been the prevention of septic peritoneal infection. This has been in great measure effected by averting its causes. But still it occurs, and Dr. Costain's observations prove, as he claims, that "when a fatal absorption is overcome, the peritoneal cavity is capable of looking after such a formidable structure as a necrotic appendix." It would appear, therefore, that lymphaticostomy must be considered an important and hopeful treatment for the prevention and cure of septic peritonitis in suitable circumstances.

A SERIES OF CASES RESEMBLING PARALYTIC ILEUS.

BY

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LIEUTENANT-COLONEL I.M.S., CIVIL SURGEON, DELHI.

THE following cases have come under my treatment during the last three years, and I am publishing them not only on account of their interest but also to invite correspondence as to the cause. I can find nothing described in the various systems of surgery which in any way resembles the cases under report.

CASE I.

In July, 1921, at Rawal Pindi Civil Hospital, a well developed young Punjabi, aged 22, came in complaining of abdominal pain and giving a history that his bowels had not been open for ten days. He did not appear to be in the least distressed and except for a distended abdomen was otherwise normal. His tongue was clean, pulse 80, temperature 98°. Pain was of a general character and no special point could be elicited on palpation. Per rectum nothing abnormal was felt.

He was admitted and given an enema with oil, soap, and turpentine. Water only by mouth. Seen the next morning, his general condition was the same. There was no sign of peritonitis. The enema had been passed almost clear. The abdomen remained distended and he complained of rather severe pain. A second enema was given and 1/2 c.cm. pituitrin hypodermically. He passed urine but no flatus, and the wash-out was returned clear. Seen again the following day he was in the same condition. He had not vomited, there was no rigidity, his pulse remained 80, and his temperature normal. He however complained of more severe pain, so I decided to do a laparotomy.

The operation was done that morning under chloroform. On opening the abdomen free blood-stained fluid escaped at once (I suppose in all there were two pints of free fluid), the small intestines, in large distended coils, and purple in colour, evacuated themselves and were immediately surrounded by hot saline towels. The large intestine was seen to be equally distended but not so discoloured. No line of demarcation of strangulation was seen, in fact the large intestine was distended down to the lower sigmoid. A rectal tube was passed well up the lower bowel and at the same time the small intestine was punctured by a large trocar and cannula and the contents as much as possible evacuated. Two ounces of mag. sulph. in ten ounces of water were introduced into the small intestine at the last puncture. Four punctures in all were made, three in the small and one in the large intestine. The intestines were returned fairly easily and the abdomen closed. Pituitrin 1/2 c.cm. was given four-hourly for six doses. The rectal tube was left *in situ*. The patient was kept in Fowler's position, and only sips of hot water given by the mouth. He made an uneventful recovery and left the hospital fourteen days later.

CASE II.

At Rawal Pindi two weeks later, a frail woman, aged about 40, walked into hospital complaining of abdominal pain and giving a history of absolute constipation for fourteen days. As in the last case, except for a distended abdomen there were no signs or symptoms of disease. She was a feeble creature with a small pulse and no physical reserve. She was given an enema as in the previous case, with the same result. The next morning as she was no better I decided to do a laparotomy and the operation was done as in the previous case.

On opening the abdomen there was no free fluid, but the intestines had the same purple appearance and were greatly distended. The same routine was carried out as rapidly as possible and the abdomen closed. In spite of pituitrin, camphor in oil, nux vomica, and enemata, her bowels refused to act and she died three days later. No obstruction was found at the time of operation and at necropsy no signs of inflammation, kinks, or bands.

CASE III.

At Jullundhar in November, 1921, an emergency case of intestinal obstruction was admitted at 5 p.m. The patient was an old, frail, wizened-up man about 60 years of age. He gave a history of absolute constipation for fourteen days, and had a distended abdomen with some abdominal pain. He had come in by road eighteen miles in an ekka and walked from it to the surgery. He was given an enema and a stimulant draught. The enema produced no result.

At 6 p.m. a laparotomy was performed. Free blood-stained fluid escaped from the abdominal cavity. The small intestine was distended, but the most curious feature was that the internal and muscular coats appeared to have given way in places and the peritoneal coat only remained intact and that was distended in large beads about the diameter of a sixpenny piece. The case was so obviously hopeless that a Paul's tube was tied in and the patient returned to the ward. He died the same night. In getting the Paul's tube out the abdomen was opened and again no visible obstruction was found.

CASE IV.

At Delhi in January, 1923, a Pathan boy, aged about 18, was admitted with a history of nine days' constipation and a painful distended abdomen. His tongue was foul, pulse 100, temperature 99°. An enema was given without result, and he was operated on almost immediately afterwards.

At operation the same condition of the intestines was found except that the large intestine was not so distended. The only possible cause of obstruction was a slight mesenteric kink at the hepatic flexure of the large intestine, but was not sufficient to cause more than slight partial obstruction. The gut did not contract down well after evacuation of the contents by the cannula, nor did much material or gas escape by the rectal tube. In spite of all the usual remedies he never passed flatus, and died three days later.

If a complete *post-mortem* examination had been possible on these last three cases some cause might have been found to account for the condition; but what about Case I, who was apparently of the same type? I feel that I cannot be the only civil surgeon in India who has come across this type of case and should be glad to hear the experience of others.

In the first two cases I was assisted by Assistant Surgeon Gopal Dass and Sub-Assistant Surgeon Chand Narain; in the third case by Khan Sahib Mohammed Shariff; and in the last case by Lieut.-Colonel H. Hallilay, I.M.S.

Memoranda:

MEDICAL, SURGICAL, OBSTETRICAL.

AMYL NITRITE POISONING.

A FEW weeks ago a retired medical man asked me to see him on account of anginoid pain in the chest coming on at night. The blood pressure was 145 mm., the heart sounds rather moderate, and the abdomen distended with flatulence. About ten that night he had an attack of pain, for which a medical friend gave him a small hypodermic injection of morphine, and left him quite comfortable. The pain returned about 1.30 a.m. Half an hour later his housekeeper telephoned for me. When seen he was in a state of extreme collapse, hardly able to speak, very pale, with a weak pulse of 120. Nine amyl nitrite capsules were lying on his bed, having been inhaled in less than an hour. His blood pressure was only 76 mm. Camphor by hypodermic injection, brandy, and hot bottles more or less revived him. Next day he had a very irritating spasmodic cough with rusty sputum. The respirations were 40, the temperature 96.4°, pulse 108, blood pressure 80 mm. His chest from the third space downwards was full of fine soft crepitations; there was no tubular breathing anywhere. His tongue was dry and brown, as also was his soft palate, which looked as if it had been burnt, and a slough about one inch by three-quarters of an inch came off it on the fifth day. For nine days the sputum was deeply blood stained and frothy; respirations remained at 40, and any movement caused increased dyspnoea. There was also watery diarrhoea. The temperature was constantly subnormal. The blood pressure varied between 80 and 90 mm., even though taking digitalis and nux vomica. After the seventh day the chest began slowly to clear from above downwards, but respirations still remained at 38 to 40 till the twelfth day; after that the breathing became easier, and by the eighteenth day the respiratory rate was 26, and he was able to sit up for an hour. There was no anginoid pain all through, and the blood pressure was still only 90 mm. on the twenty-first day.

The case rather resembled chlorine gas poisoning; apparently the nitrous acid in the amyl nitrite acted as a severe irritant to the lungs. Whether any of the dyspnoea was due to the formation of methaemoglobin in the blood was not investigated. There were no convulsions as described in amyl nitrite poisoning of animals.

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CHOLELITHIASIS WITH SITUS INVERSUS.

THE following case may prove of interest:

Mrs. J., aged 43, was admitted on August 21st to the Manchester Royal Infirmary complaining of pain in the left hypochondrium and under the left breast; the pain was also described as going round to the back and into the left shoulder. The patient was markedly jaundiced, the urine contained bile, and the stools were clay-coloured. The description and distribution of the pain were typically those of an attack of gall-stone colic except for the fact that it was on the left instead of on the right side, and the patient gave a history of having had eight similar attacks during the previous three months, each having been followed by jaundice. On examination, an indefinite tender mass was palpable at the tip of the ninth left costal cartilage. Murphy's sign was absent, and there was no hyperaesthesia. Palpation and percussion of the chest showed the heart to be on the right side, and an *x*-ray examination confirmed the presence of dextrocardia. In view of this, and the distribution of the pain and tenderness, a condition of complete transposition of viscera was suspected. The patient said that she was, and always had been, right-handed.

On August 27th Mr. A. H. Burgess explored the abdomen through a left upper rectus incision: all the viscera were completely transposed. The gall bladder and common bile duct, which was much dilated, contained several large stones, and cholecystectomy and choledochotomy were performed. The patient made a rapid and uneventful recovery.

It is an interesting point that the patient's eldest son, aged 12 years, is a typical example of Fröhlich's type of infantilism, being about five feet in height, exceedingly fat, mentally slow, and with undeveloped genitalia. In all other respects the family history is quite normal, the two other children being perfectly healthy.

Manchester. E. S. FRISCHMANN, M.B., Ch.B.

PRELIMINARY NOTE ON THE HISTOLOGY OF A MYELOMA.

A TUMOUR from the radius of a child was examined, and the following observations made. We hope to publish details at an early date.

1. The appearance and structure of the numerous giant cells present suggest that they are osteoclasts.
2. In our opinion the giant cells give rise to the spindle cells of the tumour.
3. The fibroblasts appear to be derived at a later stage from the spindle cells.
4. In several of the giant cells we found a stainable body, quite unlike the giant cell nuclei in appearance, which may very probably be responsible for the abnormal activity of the giant cells. There is some evidence in favour of the view that the stainable body is a definite parasite—probably a protozoan—which is not confined to the giant cells.

T. H. BURLEND.
Cardiff. D. J. HARRIES.

Reports of Societies.

COMPARATIVE MEDICINE.

THE first meeting of the new Section of Comparative Medicine of the Royal Society of Medicine was held under happy auspices. A large audience gathered in the Society's rooms on October 24th to celebrate a day which the President, Sir CLIFFORD ALLBUTT, described as a festival rewarding long and patient effort. The acclamation with which his eloquent address was received indicated that those who were present recognized what an important share he has taken in the enlightenment of opinion which has led to the inauguration of this Section.

Inveterate and impregnable barriers of convention, devised by mediaeval perversities, have, he declared, split up medicine into fractions, divorcing medicine from surgery and separating diseases of animals and plants from those of mankind. The folly of many of these divisions is apparent, but their eradication is a difficult operation. One such barrier has been broken down by the co-operation of medical and veterinary scientists, thereby acknowledging the unity of medicine as a biological study.

Medicine has much to gain from the comparative method of study, a method which has proved indispensable to the progress of anatomy, anthropology, and embryology. Pathologists have already made some use of the comparative method of study, and by their researches into the properties of cells and nature of infections have gathered in some knowledge. The comparative method is necessary in medicine in order "to shed cross lights reciprocally from the pathology of one kind of living thing upon another." It will also have a utilitarian purpose, to study the diseases common to man and animals and the manner in which these diseases may be carried by animals to man, to investigate the peculiar natural immunity of certain animals to certain diseases, and the defensive processes of animals and plants.

But, as Sir Clifford Allbutt pointed out in a letter to the *Times* in 1906, the attention of those who would study comparative medicine should be concentrated on the pursuit of larger and more disinterested researches, on "a pathological biology which hereafter shall give us not only a control of several diseases, but an insight into large and fertile principles, foresights and controls over wide fields of nosology, interpretations of the various comings and goings of the manifold kinds of disease in all living things—

animals and plants—of specific kinships underlying superficial differences, and of disorders of the more complex animals by the light of elementary changes in the simplest animals and in plants, in which the plasticity, I had almost said the pregnancy, of protoplasm shows us in manifold ways its marvellous endowments."

The President referred to the work of Pasteur and John Hunter, both of whom used the comparative method of study with conspicuous success, and closed his remarks by quoting Benjamin Franklin's now proverbial phrase, "Hard work is still the road to prosperity, and there is no other."

Professor HOBDAY read a paper on cryptorchidism in animals, and illustrated his communication with a series of lantern slides, photographs, and drawings of testes retained in the abdomen or inguinal canal of animals.

Mr. MCADAM ECCLES followed with a paper on imperfectly migrated testis in man, and dealt with the etiology, function, morbid anatomy, and treatment of this condition. He dismissed any possible influence of the endocrine glands, which have such a profound effect on the formation of secondary sexual characteristics, for these act everywhere through the blood stream, and presumably would act equally in the one testis which has remained within the abdomen and the other which has migrated to the scrotum. The factor of heredity, so important in animals, appeared to be less common in man, for in answer to his inquiries not more than 2 per cent. gave a history of like condition in grandfather, father, or brothers. It was doubtful if an arrested testis was ever fully developed. Cases were on record in which a man with double abdominal retention of testes had procreated children and most abdominal testes had the power of producing an internal secretion, but perhaps not of the same type as that of a fully developed and fully migrated organ. A testis within the abdomen was liable to all the diseases to which a fully migrated testis was prone—for example, inflammation, cysts, neoplasms, and scrotal hydroceles and herniae might be associated with completely retained testes. In discussing treatment Mr. McAdam Eccles pointed out that inflammation or enlargement of an abdominal testis called for its prompt removal, but simple unilateral or bilateral abdominal retention required no surgical interference. The removal of a pair of abdominal testes would, of course, deprive the body of organs which might provide some internal secretion.

To the subsequent discussion on these two papers Sir JOHN BLAND-SUTTON added his experience of the pathology of this disease and indicated useful fields for further research; a number of veterinary surgeons also contributed to the debate.

THE ENDOCRINES AND THE WORK OF THE KIDNEY.

IN his presidential address to the Section of Urology of the Royal Society of Medicine on October 25th, Dr. W. LANGDON BROWN dealt with the relation of the endocrines to the work of the kidney.

He said that the primitive excretory organs as found in invertebrates were nephridia, typical segmental organs opening internally into the body cavity and externally on to the surface. On Gaskell's theory of the origin of the verterbrates from arthropods, the old alimentary tract, of which the infundibulum represented the mouth, became the central canal of the nervous system. In the crustacea the gills kept up a vigorous current of water from behind forwards so that waste products which were discharged in this situation were speedily carried away from the animal, whereas in the fish, with the current going in the reverse direction, this would have led to contamination of the water supply to the gills. Circumstances brought about an alteration in function, and a new use was found for the gland in this position: it became the pituitary. Comparative morphology pointed to the conclusion that, in the neighbourhood of the gill slits, segmentally arranged structures gave rise to the tonsils, thyroid, parathyroids, and thymus, in positions which might be expected if they were homologous with nephridia. It might be asked why the excretory functions, originally so uniformly distributed in segmental nephridia, had become restricted to such condensed structures as the kidneys. It was doubtful whether the tubules of the vertebrate kidney were strictly homologous with the nephridia of invertebrates, although they were so similar in structure and function. Nephridia arose as invaginations from the exterior, and were therefore epiblastic, and in the lower vertebrates the kidney tubules grew out from the body cavity, and were therefore mesoblastic.

There seemed to be three interesting phases in the evolution of the excretory system: (1) the epiblastic intercellular nephridia of the invertebrates which opened into the body cavity; (2) the mesoblastic intercellular kidney tubules of the lower vertebrates shut off from the body cavity; (3) a return in the higher vertebrates to the process of epiblastic invagination, but not to an intracellular duct nor to a communication with the body cavity. The opinion of biologists at the present time was in favour of this view. It was an extraordinary example of the way in which Nature could change her plans according to circumstances and construct organs *de novo* which resembled the old ones closely enough to have deceived biologists for more than a generation. It showed how plastic the evolutionary process was, and that it was not so dependent upon recapitulation as was thought. He went on to suggest that the influence of the endocrine system on the kidney was, in part at least, an expression of the interest it continued to take, as it were, in functions formerly its own. When nephridia were replaced by the more adaptable mechanism, and some of their outlets were dammed up by the formation of new structures such as the vertebrate alimentary tract and the pleural folds, they had either to vanish altogether or to take on some new function. To a large extent the second course was adopted, and some of them became endocrine glands. The internal secretions might be looked upon as specializations of the old chemiotactic mechanisms, and they revealed their antiquity in the way they clung to the vestigeal structures. Not infrequently when, in the course of evolution, a structure had become useless for its original purpose the endocrine system supplied it with a new tenant. This change of function was illustrated by the adrenal cortex, the thyroid, thymus, pituitary, and pineal glands, all of them, except the last, structures representing modified nephridia, and he doubted whether the pineal was properly an endocrine structure at all. Not only were there vestiges of excretory structures in the endocrine glands, but there were vestiges of excretory methods in the internal secretions, as he proceeded to illustrate. In short, the particular function of the primitive nephridia was to bring the internal working of the organism into harmony with its environment, and this was exactly what the endocrine system continued to do, both through its secretory activity and its close association with the sympathetic nervous system. The kidney was thus set free from the labour of forming an internal secretion, and able to devote itself entirely to excretion, while at the same time its work was influenced by the other internal secretions so as to ensure a harmony between the internal economy and its environment. This was of biological interest, because in the pituitary they had a gland which was definitely excretory in function in invertebrates as high as the crustacea; and it was of clinical interest also as bearing on diabetes insipidus and polyuria in general. He went on to discuss the pathology of diabetes insipidus from this point of view, agreeing with Rabinowitch in regarding diabetes insipidus as being due to the lack of some internal secretion which normally regulated and moderated diuresis by acting upon the cells of the kidney. He looked upon pituitrin as that secretion, and it seemed to him that the situation could be expressed most conveniently by saying that the output of the pituitary regulated the threshold of the kidney for water. This would account for the apparently aberrant instances of a diuretic effect of pituitrin, and would also explain how, while having a selective action on water, it did not hinder the output, for instance, of dyes. The material excreted by the kidney fell into two categories: purely waste products, useless to cellular life, for the excretion of which there was no threshold, and products which might play a useful part in cellular life—sugar, sodium chloride, haemoglobin, and water—in the way of which the kidney did interpose a threshold, so that they only passed into the urine when their level

in the blood exceeded this barrier. But the barrier was not kept at a constant level, and the variation in the height of the threshold was one of the ways in which the kidney adapted itself to contingencies. A better word than "threshold" was "sluice," and the raising or lowering of this sluice could apparently be controlled through certain endocrines, and could be made to vary for one urinary constituent without involving another. The matter was not without its difficulties even on this view, and he thought it best merely to state that the pituitary regulated the output of water by some direct effect on the kidney cells, and that at present it was not known exactly how the balance between the water of the blood and the urine was struck.

In recapitulation Dr. Langdon Brown supported Claude Bernard's contention that the object of all the vital mechanisms was to keep the internal environment constant. The nephridia originally were the principal means of maintaining a constant relationship between the internal and external environments. In evolution nephridia were replaced by analogous but probably not homologous tubules which formed the kidney, whose function might be defined as that of keeping the chemical composition of the body constant. Some nephridia were retained and modified to house the hormones which, previously less specialized, now played an important part in maintaining the internal environment. Not only morphologically but physiologically these modified nephridia recalled their origin. The last of them to retain excretory functions, the pituitary, still showed its association with such functions by the profound modification it was able to exert over the threshold of the kidney for water. It was probable that diabetes insipidus was due to the loss of this control, and possible that the overlying nervous structures influenced the matter through the pituitary; they certainly could do so without the intervention of the vasomotor system.

Dr. GEORGE GRAHAM raised the question why the action of pituitrin had been misunderstood for so long a time. All the original work on pituitrin showed it to be a diuretic. The misunderstanding arose by reason of the fact that the experiments on animals were carried out under an anaesthetic, in which condition the kidney vessels dilated and fallacious results were obtained. In watching the effect of pituitrin on the output of the urine it had to be remembered that the effect lasted for a limited number of hours, after which it ceased suddenly.

Dr. P. J. CAMMIDGE said that the effect of pituitrin had been worked out by a good many people, but there was one method of investigation not used before to his knowledge which Mr. Howard and he had been employing for a considerable time. They thought that some useful information might be forthcoming by some method of estimating variations in the concentration of the blood, if a method fairly easy to carry out could be arrived at. The method adopted was to take the blood counts. An animal was given an injection of pituitrin, and samples of blood were then taken from the ear at intervals of half an hour and the number of red cells estimated. It was found that there was a steady diminution in the number of such cells following pituitrin injections. The changes in the concentration of the blood which occurred after injections of pituitrin were interesting phenomena worthy of much further investigation.

Dr. LANGDON BROWN, in his reply, recalled how the point of view with regard to diabetes insipidus had changed within recent years, until finally the condition had come to be placed in two categories—namely, renal incapacity and some disturbance of the pituitary and overlying structures, and one or both of these derangements might be responsible for this extraordinary condition which was found so difficult to alleviate until the introduction of pituitrin treatment.

HEMIHYPERTROPHY.

THE annual meeting of the Section of Diseases of Children of the Royal Society of Medicine was held on October 26th, with Mr. ANGLIN WHITELOCKE, the President, in the chair. A case of hemihypertrophy traced for eighteen and a half years was shown by Mr. P. LOCKHART-MUMMERY. The patient was first exhibited at the Royal Society of Medicine in January, 1906 (reported in Vol. 6 of the Society's *Proceedings*, in the Section of Diseases of Children, p. 153), in collaboration with the late Mr. George Carpenter.

The child was then 2½ years old, and the left side of his body and head was growing faster than the right side. He was originally brought to hospital because he was walking lame. There was apparently nothing else wrong with the child; his mental condition was normal and no abnormalities were detectable in the nervous system. The difference in length of the lower limbs was half an inch. The child was again exhibited before the Society in January, 1908. He was then very lame and there was three and a half inches difference between the length of the legs. *X*-ray photographs showed the epiphysis to be more advanced on the left side than on the right. The child appeared to be two years older on the left side than on the right, and the left side of the tongue, the left eye and ear were all larger than the right. The child was lost sight of after this until recently, when he was found to be 21 years old, and as there was always considerable speculation as to what happens in these cases he was again brought before the Section. So far as Mr. Lockhart-Mummery was aware this was the only case in which a child suffering from this condition had been traced to adult life. There was now only half an inch difference between the two sides. It was obvious that the small side was now "catching up" with the big side. Except on close observation one could not detect any difference between the two sides of the face or tongue.

Dr. F. J. POYNTON showed two cases, one of unilateral and one of bilateral congenital dilatation of the ureters. In the former case the diagnosis was confirmed by a *post-mortem* examination. The diagnosis was made in life by the aid of a cystoscopic examination, and by the *x* rays, after injecting 20 per cent. sodium bromide into the bladder and ureters. In both cases there was a gross infection of the urinary tract. The problem of the causation of the dilatation was discussed, and the majority of those present seemed to favour the presence of a spasm of the urethra. Dr. DINGWALL FORDYCE suggested the possibility of this spasm being analogous to that of pyloric stenosis. He thought it doubly interesting because the elder of the two children—and the case in which the condition was bilateral—was a girl. Mr. MAX PAGE suggested that if the condition were analogous to pyloric stenosis it might be treated upon the same lines by section of the sphincter.

TREATMENT OF INCONTINENCE OF URINE IN WOMEN.

A MEETING of the North of England Obstetrical and Gynaecological Society was held in Manchester on October 19th, with the President, Professor BLAIR BELL, in the chair, when Dr. D. DOUGAL (Manchester) read a short paper on the operative treatment of certain cases of incontinence of urine occurring in nulliparous women.

Dr. Dougal said that the degree of urinary control had been expressed by Taylor and Watt as:

(1) *Normal.*
(2) *Fair*—which was normal except on special occasions; for example, distension of the bladder, temporary vesical irritability, or times of mental or physical fatigue.
(3) *Poor*—which allowed the urine to escape on any special abdominal strain, such as might be caused, for example, by coughing and active exercise; such patients were wet most of the time.
(4) *Lost*—when urine continually dribbled from the patient, and very little was retained in the bladder.

Taking the "poor" and "lost" groups only, the figures showed that about 8 per cent. of nulliparous women suffered from a disagreeable amount of urinary incontinence (Taylor and Watt). In this paper Dr. Dougal intended to deal only with those cases of active incontinence of urine which were due to weakness of the sphincter vesicae. He pointed out that the sphincter apparatus of the bladder consisted of three parts:

(1) *Intrinsic sphincter*, which was merely a specialized portion of the middle stratum of the bladder musculature. Its presence was even denied by some authorities.
(2) *Extrinsic or urethral sphincter*, composed of compressor urethrae, forming a complete muscular ring round the upper part of the urethra. All authorities were agreed that this was the most important factor in sphincteric apparatus.
(3) *The supporting fibromuscular tissues lying between the base of bladder and the anterior vaginal wall;* this was made up of paravesical vascular sheaths and their connexions, and was strongly

developed towards each side, where it was closely related in front to the anterior layers of the levator ani and behind to the parametric tissue.

He considered that the sphincters were the most important factors, and in support of this contention he cited the fact that incontinence of urine was not commonly met with in cases of prolapse, even when the anterior wall, and presumably the supporting structures of the bladder, were much weakened and displaced. He described the more important operations for the cure of this condition, and illustrated his descriptions by lantern slides.

The operation which he performed in his most successful cases was as follows:

The perineum was first incised to allow of easier access to the parts. A triangular area of the anterior vaginal wall was removed, exposing the urethra and bladder. A mushroom catheter was then passed into the bladder, and, using this as a guide, two mattress sutures of catgut were inserted into the tissues on each side of the bladder neck (after Kelly). Deep sutures were then inserted through the para-urethral tissues to narrow the canal throughout its length, and the anterior colporrhaphy then completed in two layers. Finally the perineal incision was sutured.

Notes on Two Cases.

Case 1.—An unmarried woman, aged 26 years, had a normal menstrual history. She was a thin, poorly nourished woman, with very little energy and very depressed and miserable. She had suffered from urinary incontinence practically since birth, being troubled during the day, but worse at night. She had tried all sorts of medical treatment. On examination, the external genitals were normal and of virginal type; the vaginal orifice admitted one finger with difficulty, but the upper part of the anterior vaginal wall appeared somewhat lax, although there was no actual prolapse; the uterus was normal in size and acutely anteflexed. After the operation, as above, she required catheterization for a week. Her bed was wet once before she was discharged from hospital. She had been well ever since then—two and a half years ago—and was now a cheerful, healthy-looking young woman.

Case 2.—An unmarried young woman, aged 21 years, had a normal menstrual history. She was rather thin and miserable, and not very bright mentally. She was apparently normal until an acute illness ten years ago, but since then had been incontinent, chiefly at night, but also during the day. For the last six years she had not had a holiday owing to her bed-wetting. On examination, the external genitals were normal; the vaginal orifice was virginal, and again a considerable laxity of the upper part of the anterior vaginal wall was found; the uterus was normal in size and acutely anteflexed. It was now over six months since her operation and she had wetted the bed twice since; but she had been away for a holiday and was much better in every way.

The great majority of these cases of incontinence could be cured, or at any rate much relieved, by operative treatment. There was no doubt that many young single women were allowed to go on suffering from this distressing ailment because no obvious lesion could be made out, and the disability was attributed to neurosis. There was a neurotic element, no doubt, but the real underlying cause would be found to be in a weakness of the sphincter mechanism, which could often be dealt with successfully by surgical methods.

In the discussion which followed, Dr. MILES PHILLIPS said he thought that incontinence of urine was a common feature of partial vaginal prolapse in multiparae. The PRESIDENT expressed surprise at the high figure (8 per cent.) of incontinence in nulliparae. He did not believe that incontinence was due to neurosis. There was not a single structure in the apparatus which could be said to constitute a true sphincter. Dr. W. E. FOTHERGILL said that he had done Pawlik's operation a few times with success. He questioned whether incontinence of urine was common in cases of vaginal prolapse in multiparae. He thought that the operative measures taken were a suggestive treatment. Dr. LEITH MURRAY said that the fact that the incontinence was worse at night pointed to the neurotic element rather than to the dislocation theory.

Cases and Specimens.

Dr. J. H. WILLETT (Liverpool) showed a specimen of sarcoma of the uterus, which was removed from a nulliparous woman, who had been married for six months; the condition was diagnosed as a cystic adenoma of the ovary with a fibroid in the uterus. At operation the cyst was tapped and blood-stained fluid evacuated; only then did the origin of the tumour become apparent. The specimen consisted of a partly cystic, partly solid mass arising from the fundus of a slightly enlarged uterus, in which was a small fibroid nodule. Sections of both showed the appearance of a mixed-celled sarcoma. Three months after operation the patient looked well and had gained 17 lb., although portions of capsule of growth had been left adherent to intestines. Dr. DONALD requested Dr. Willett to report on the case in twelve months' time to inform the society if the patient was without recurrence.

Dr. H. LEITH MURRAY (Liverpool) showed sections of a squamous-celled carcinoma of the cervix from a nullipara, aged 27 years; she had been married for two and a half years. There had been bleeding and discharge for seven months, and loss of weight. The cervix was thickened and ulcerated, and the growth had invaded the broad ligaments and uterosacral ligaments and was quite ineradicable.

Dr. LEITH MURRAY also described a case of colloid carcinoma of the uterus in a 2-para aged 28. She had complained of pain in the bowels for six months; there was no blood-stained discharge, no urinary trouble, and no loss of weight.

On examination, there was a large mass in the abdomen extending nearly up to the umbilicus, and distending the anterior abdominal wall. Above this was a movable mass the size of a fist. On vaginal examination, the cervix was found so greatly enlarged as to fill the vagina up to the ostium vaginae, and to prevent insertion of the finger between it and vaginal walls. The cervix was ulcerated, was continuous with the abdominal mass, and was absolutely fixed. Sections of pieces of cervix showed a typical colloid carcinoma with normal cervical glands scattered throughout, in some places greatly compressed. The diagnosis was malignant disease of the ovaries with colloid cancer of the uterus, and secondary omental deposit. This was confirmed by laparotomy, and a portion of omental growth was removed which showed on section the typical colloid appearance. The patient died six weeks after operation. The origin of the colloid growth was obscure owing to the presence of normal cervical glands in all sections, in spite of so great an enlargement of the cervix.

Dr. J. E. GEMMELL (Liverpool) read notes of two cases of fibroid tumours associated with gestation.

Case 1.—A 5-para had a fibroid, undergoing red degeneration, growing from the fundus uteri, which was detected in the early stage of pregnancy, and gave rise to no symptoms or discomfort during gestation; the case ended in normal labour. The fibroid was of such a size that its weight was 4 lb. 3 oz. During the puerperium, pain and pyrexia were marked, the accompanying toxaemia determining operative treatment by hysterectomy. Intermittent pains, commencing twenty-four hours before operation, had resulted in dilatation of cervix and expression of a large part of the growth filling the vagina. The tumour was a typical example of red degeneration, with necrosis.

Case 2.—A 2-para with a history of three months' amenorrhoea and recent slight blood-stained discharge, had a fibroid, the size of a tennis ball, situated posteriorly and filling the pouch of Douglas; double ovarian cysts were also present, and the whole of the pelvic organs were matted in the pelvis, forming a fixed mass. Panhysterectomy and double ovariotomy were performed. The cysts proved to be "cystadenoma."

MODERN METHODS OF ANAESTHESIA.

AT the meeting of the Aberdeen Medico-Chirurgical Society on October 25th, the President, Dr. ALEXANDER OGSTON, delivered his presidential address on some modern methods of anaesthesia. He first gave a brief survey of the methods of anaesthesia in common use in Aberdeen within his own experience, pointing out that down to about 1917 the method in practically universal use was the administration of chloroform, or in rare cases ether given in a cone-shaped towel. As long ago as the early eighties of last century Dr. Blaikie Smith, however, had devised and used with a certain amount of success a special inhaler of leather and metal with flannel padding for the administration of open ether. About 1917 open ether came into more common use, having been brought to the notice of anaesthetists by Sir Henry Gray after a visit to America. Dr. Ogston then discussed this method, indicating its difficulties, and describing the various methods in use and the types of apparatus, including his own special mask, which prevented the diffusion of the ether vapour. The intratracheal and rectal methods were specially referred to. The use of combined nitrous oxide and oxygen was then discussed, and apparatus shown; modern improvements were indicated and the use of this anaesthetic with the addition of ether or of chloroform and ether described. On the motion of Dr. THOMAS FRASER, C.B.E., D.S.O., the President was accorded the thanks of the meeting for his valuable address.

Reviews.

SIR THOMAS BROWNE'S SKULL.

In the year 1840, in preparing for an interment in the chancel of the Church of St. Peter Mancroft, Norwich, the coffin containing the remains of Sir Thomas Browne was accidentally opened. As to all that happened in the next few days we are in the dark, but it is known that one of the churchwardens was an antiquary and a collector and that after his death the plate from Sir Thomas's coffin was found in his secret drawer, and that about 1845 or 1847 a skull purporting to be that of Sir Thomas found its way into the museum of the Norfolk and Norwich Hospital, where it remained until it was reinterred in its original resting place last year. While some may think that the hospital of his adopted city was a perfectly fit and proper place for the reverent custody of the cranium of one who so much interested himself in the investigation of ancient burials, and may consider this surrender to sentiment unnecessary, it is a matter for congratulation that the approaching disappearance of the relic should have suggested such an all-embracing study as is recorded in the monograph now under notice. In *Sir Thomas Browne: His Skull, Portraits, and Ancestry*,[1] to quote Sir Arthur Keith's own words "we have exemplified the best kind of scholarship, one which illustrates the right application of laboratory methods to historical enquiry and to anatomical pursuits." In her research Miss MIRIAM TILDESLEY, to whose devoted labour the monograph is due, has followed every clue to its end and has applied a clear and logical understanding to the elucidation of obscure problems, with such success that we feel that unless fresh and unsuspected evidence is brought to light the last word has now been said on the subject. But the libraries and lumber rooms of English country houses have been by no means thoroughly searched yet, and it is significant that notwithstanding all that had been spoken and written previously the best portrait of Sir Thomas Browne, which is reproduced as a frontispiece to this memoir, only came to light just in time to be noticed in an appendix. There are a good many engravings which purport to be portraits of Sir Thomas Browne, but few of them are originals and most of them can be traced to two or at most three originals. The evidence of engravings has to be very critically considered before it can be accepted, for the printseller was often a frugal soul who was not inclined to waste plates, but worked up old ones so as to represent new subjects. So did Lombart's equestrian portrait of Oliver Cromwell suffer five changes, to end as a portrait of his victim Charles I. "And thus the whirligig of time brings in his revenges." Not only were portraits often adapted but views of passing events, so that no engraving unless it have a spotless pedigree can be taken as evidence of such a matter as (for instance) naval architecture or any custom supposed contemporary. We regret to have to agree with Miss Tildesley that the high-browed Browne portraits in the Royal College of Physicians of London and the Bodleian Museum, Oxford, cannot represent the man the endocranial cast of whose skull is now described by Professor Elliot Smith, although they may be much idealized copies or copies of copies of more faithful pictures taken from life. We think that Miss Tildesley will convince every candid reader of the genuineness of the skull, which is chiefly remarkable for its low and sloping frontal region, though this is compensated by extra room in its posterior part, to such an extent as to bring it up to average capacity. Its original owner, anticipating Gall and Spurzheim, wrote:

"And, since the dimensions of the head measure the whole body, and the figure thereof gives conjecture of the principal faculties, physiognomy outlives ourselves and ends not in our graves" (Hydriotaphia, Ch. III, last paragraph but one).

Fuller knowledge would no doubt have modified this view, for Miss Tildesley is forced to the conclusion that "Sir Thomas Browne's skull supports the conclusion that the correlation of the superficial head and brain characters with mentality is so low as to provide no basis for any prognosis of value." It is perhaps not surprising that in this particular case the brain space is only average. This "Amplissimus Vir" was endowed with an inquiring but not a truly great mind and with a sense of style and of the beauty of language, which, when he had for the time forgotten Euphues, enabled him to enrich us with sayings that have become household words. Yet he was often obscure. Charles Lamb, who greatly admired him and clearly owed much to him, wrote of "the beautiful obliquities of the *Religio Medici*" and said that Browne and Fulke Greville were two authors he should like to see, because their writings were riddles; "I should like," he said, "to ask them the meaning of what I should suppose no mortal but themselves can fathom." The excellent reproductions in this memoir of probably all the known portraits of Sir Thomas (including one which has hitherto passed for Shakespeare) enable the reader to judge for himself of the extent of their agreement with the contour of the skull. Both for its artistic and its scientific and genealogical interest this memoir will doubtless be treasured by the few who are so fortunate as to possess it.

FASTING AND UNDERNUTRITION.

In his book on *Fasting and Undernutrition*[2] Professor MORGULIS has had two definite objectives in view: first, to collect and to classify what is known about inanition; secondly, to consider the facts in their proper biological setting. The basis and starting point in all nutritional studies is the metabolism that obtains during inanition, and accordingly the subject of fasting occupies the main part of this book, chiefly in connexion with acute inanition, which is the most thoroughly investigated type.

Believing that there is at the present time a need for a comprehensive survey of the subject, the author has devoted one of the five parts into which the work is divided to a classified list of the writings of previous observers; this list of references occupies eighty-six pages. The views and experiments of fundamental importance derived from this source are described in detail in the body of the work, and submitted to criticism. Three types of inanition are distinguished: (1) physiological inanition, which is a normal occurrence in nature; it is either a definite phase in the life cycle of the animal as a seasonal event or accompanies the periodic recurrence of sexual activity; (2) pathological inanition, such as that arising from oesophageal stricture; (3) accidental or experimental inanition, including intentional fasting. Under the heading of physiological inanition are discussed hibernation, the metamorphoses of insects, of the Mexican axolotl, and of the larvae of batrachians, and the inanition of the salmon during the breeding season. The subject of hibernation is dealt with systematically under the subheadings of changes in body weight, changes in body temperature, the respiratory exchange, protein metabolism, mineral metabolism, metabolism of energy respiration, the circulation of the blood, thermogenesis and thermoregulation, excretion and secretion, reaction of the muscles, irritability of the nerves, reaction to drugs and toxins, and tissue repair. In addition a chapter is devoted to the histology of the organs.

Experimental inanition is considered under five headings, according as it is acute, partial, chronic, or intermittent. Acute inanition is dealt with in its chemical, physiological, and morphological aspects in the same thorough and systematic manner as in dealing with hibernation. Under partial inanition, by which is meant a condition in which only one of the various substances essential for the organism's subsistence is wanting, the effects of oxygen starvation are described, together with those of dry feeding, mineral starvation, carbohydrate, protein, and fat starvation and vitamin deficiency. In a final chapter the influence

[1] *Sir Thomas Browne: His Skull, Portraits, and Ancestry.* By Miriam L. Tildesley, Research Worker, Royal College of Surgeons' Museum: with an introductory note by Sir Arthur Keith, M.D., F.R.S., and a report on the endocranial cast by Professor G. Elliot Smith, M.D., F.R.S. Reprinted from *Biometrika*, vol. xv, and issued to subscribers only. 1923. (Imp. 8vo, pp. 76; 54 plates, frontispiece, and folding pedigree.)

[2] *Fasting and Undernutrition: A Biological and Sociological Study of Inanition.* By Sergius Morgulis, Professor of Biochemistry, University of Nebraska College of Medicine. New York: E. P. Dutton and Company. (Demy 8vo, pp. xiii+407; 15 figures. 5 dollars.)

of inanition on growth and its sociological relations are discussed. The book is a storehouse of facts clearly and systematically arranged, and can hardly fail to become a standard work on the subject.

PHYSICAL CHEMISTRY IN INTERNAL MEDICINE.

IN his book on physical chemistry in internal medicine[3] Professor H. SCHADE has made an ambitious attempt to bring into closer relation the assured results of recent physico-chemical research and the practical sphere of pathology and therapy. Considering the mass of such data scattered through the literature of medical science, the time is held to be ripe for the comprehensive experiment of undertaking the definition of the contribution which physical chemistry has to make to practical medicine.

The book is divided into three parts. The first comprises a somewhat cursory statement of the fundamental properties of crystalloidal and of colloidal solutions, particular emphasis being laid on the conditions governing the stability of the latter. As a judicial statement of the physiological potentialities of modern physico-chemical thought this section loses in authority when certain important omissions have to be recorded. One finds, for example, no reference to the Donnan theory of membrane equilibrium, a theory whose application to the problems of the living cell is full of promise. A discussion of the views of Loeb on the colloidal behaviour of proteins might, likewise, have been included with advantage.

The second part is devoted to a systematic study of the progress made in the different fields of medicine under the influence of physico-chemical experiment. The problems of general pathology, infectious diseases, diseases of the blood, of metabolism, of the intestinal tract, the liver, the kidney, the vascular system, connective tissue, the lungs, the muscular system and the nervous system are dealt with in successive chapters. It will be seen that the scope is comprehensive. The author draws largely on the work of Michaelis on hydrogen ion concentration, of v. Korányi on cryoscopy, and of Höber on the physico-chemistry of the cell. A. V. Hill's remarkable interpretation of the physiology of muscle contraction is an unexplained omission.

A description of the technique of the chief physico-chemical methods of value in medical diagnosis and research makes up the third part of this book, which undoubtedly fills a gap in medical literature. Though a discrimination between fact and hypothesis is sometimes lacking, the book will not be found wanting in interest and stimulus to those medical men who are keen to bring the ward into closer touch with the laboratory. Of the fifteen hundred references quoted 95 per cent. are to work published in the author's own tongue!

AFTER-TREATMENT OF WOUNDS AND INJURIES.

THE book on physical therapeutics[4] by Drs. GUILLEMINOT, DAUSSET, and DUREY is the seventh of a series of eight volumes which includes works on the special treatment of the sequelae of wounds and injuries viewed from various standpoints. The volume before us is confined to consideration of the treatment of the sequelae of wounds and of industrial accidents.

Dr. Guilleminot's chapters on electro-diagnosis are clear and informative. The various apparatus appropriate for electro-diagnosis and treatment, including that by x rays, is clearly described. He discusses adequately the quantitative and qualitative changes in the conductivity and excitability of nerves and nerve centres after injury and the best electric methods of treating these disabilities. The descriptions of instruments are clear and sufficiently full, and include those for x-ray therapeusis and also for radium therapeusis. This section is of considerable practical value.

Dr. Durey, in the introduction to the section on kinesitherapy and functional re-education, says that despite the experiences of the war little change has been made in the essential principles; manual is, he considers, to be preferred to mechanical treatment, and above all it is to be borne in mind that the suggestive value of physio-therapeutics is very important. This section is not equal in value to the first. Passive movements are very inadequately described, while the subject of active movements is dismissed in fifteen lines of print. The pages devoted to the after-treatment of lesions of the bones, joints, and nerves are, however, of value.

The third author, Dr. Dausset, adequately presents the current practice in treatment by heat, light, and hot and cold water, and compares the advantages of various French spas.

A TEXTBOOK OF HISTOLOGY.

IN *A Manual of Histology*[5] by Professor V. H. MOTTRAM the main departure from the conventional method of teaching this subject is to be found in the form of illustration adopted. The author considers that pencil diagrams represent to the student the pictures presented by the microscope more satisfactorily than the mixture of photomicrographs, coloured plates, and diagrams which are to be found in most textbooks. The illustrations of this book, which are all reproductions of the author's own drawings, are certainly lucid and well drawn, but it may be doubted if they possess the advantage claimed for them—in the interpretation, for example, of stained preparations. It is to be feared rather that because they are excellent examples of what the student ought to draw himself they will tempt the latter to reproduce in his notebook the diagrams themselves instead of giving a pencil interpretation of the structures revealed by the microscope.

The descriptive matter of the manual is clear and concise, the method of tabulation being much resorted to. Here again, whilst there are obvious advantages to the busy student in this method, there is a danger of short-cutting the education of the deductive powers which should surely be the main purpose of histological instruction. We note a misprint on page 85, where the ratio of red to white corpuscles in the blood is given as 50 to 1!

The book has been written for medical students and its scope is, naturally, that required for the intermediate medical examination. The first and the final chapters are devoted respectively to brief instructions in the handling of the microscope and the technique of staining and mounting sections.

The manual will be welcomed by student and teacher alike, for it will economize the labours of both. We hope that it will not result in a wholesale reproduction in our medical schools of what the author saw by the aid of his microscope.

DENTAL ANATOMY AND PHYSIOLOGY.

IN the preface to their *Textbook of Dental Anatomy and Physiology*[6] Mr. HUMPHREYS and Mr. WELLINGS tell us they have written a small, condensed textbook, which is intended to meet the requirements of dental students preparing for their examinations, and is based on the curricula of the various licensing bodies. This effort at condensation may be responsible for the fact that there is in the book no reference to physiology. We suggest that the process might be carried one step further by omitting all reference to physiology in the title. We should then have a very useful book on dental anatomy. The first half is devoted almost entirely to man and deals with the development of the jaws and teeth, the anatomy of the teeth, the structure and development of the tissues of the teeth, together with a short account of the temporo-mandibular articulation. Condensation has been carried to just the right point, and the chapter on the development of the jaws may be singled out for

[3] *Die Physikalische Chemie in der Inneren Medizin. Die Anwendung und die Bedeutung physikochemischer Forschung in der Pathologie und Therapie.* Von Professor Dr. H. Schade. 3te vermehrte und verbesserte Auflage. Dresden and Leipzig: Theodor Steinkopff. 1923. (Med. 8vo, pp. viii+605; 120 figures. Paper, 11s. 3d.; bound, 12s. 5d.)

[4] *Traitements Physiothérapeutiques des Séquelles des Blessures et des Accidents du Travail.* By Drs. Guilleminot, Dausset, and Durey. Paris: J. B. Baillière et Fils. 1923. (Imp. 16mo, pp. 265; 62 figures. Fr. 16.)

[5] *A Manual of Histology.* By Professor V. H. Mottram, M.A. London: Methuen and Co., Ltd. 1923. (Demy 8vo, pp. viii + 283; 224 figures. 14s. net.)

[6] *A Textbook of Dental Anatomy and Physiology.* By John Humphreys, M.D.S.Birm., F.S.A., etc., and A. W. Wellings, M.D.S.Birm., L.D.S.Edin. London: Edward Arnold and Co. 1923. (Demy 8vo, pp. viii + 325; 254 figures. 16s. net.)

special praise. The section, however, is rather spoiled by faults in the illustrations—in one or two instances the pictures and the letterpress do not agree; illustrations of developing human teeth might be substituted for those taken from the calf.

We note, too, that the diagram showing the progress of calcification of the teeth makes enamel development begin at the tips of the enamel cusps instead of at the tips of the dentine cusps. The dates of eruption of the first molars and incisors might be put earlier than seven years, and we may ask the authors how many instances of supplemental canines they have seen. Such an occurrence must be very rare, while, contrary to the authors' experience, supplemental bicuspids are not very uncommon. The second portion of the book, dealing with comparative dental anatomy, begins with a short but well thought out note on zoology, embryology, palaeontology, and evolution, with a chart of life in geological time which must add greatly to the student's interest in the dentitions of the extinct and living creatures he has to study. Condensation has not been allowed to rob the subject of its interest; and were it not for the fact that it is regarded by the student somewhat as cram-stuff for examination we can imagine him spending delightful hours over it. As it is, after reading it over we can see no connexion between comparative dental anatomy and daily practice. Generally the book is clearly written, but there are faults—"In the coronal position the main nerve supply appears to be deflected towards the periphery of the pulp"; either in its context or alone this is somewhat cryptic!

Both for the effort at condensation and for its own value we welcome this book.

THE STORY OF ANZAC.

THE *Official History of Australia in the War of 1914-1918* is to be published in twelve volumes, which will contain 2,000 maps and illustrations showing in great detail the ground over which the Australians fought. The whole set of volumes will not be ready for another two or three years, and the volumes are not appearing in numerical order. We reviewed Volume VII on September 8th, 1923 (p. 419). The first volume was issued some time ago, and as the appearance of other volumes is likely to be delayed we propose now to give some account of it.

It is entitled *The Story of Anzac*,[1] and is by Mr. C. E. W. BEAN, who has taken full advantage of a splendid opportunity. He has written a book which must live as a classical account of the early days of the 1st Australian Division, of their training in Egypt, and of their participation in the heroic attack on the Turkish defences at Gallipoli. His style is clear and vigorous, and the narrative is more than interesting—it is fascinating. The reader's attention is firmly gripped by the story unfolded of the dangers and complexities of the situation. Beyond all this there is the definite feeling that this history will be read and re-read by many generations of Australians.

Mr. Bean is an Australian patriot to his finger-tips, and moreover a clear-sighted one; he knows his countrymen, with all their virtues and all their faults, as few have known them. To be mentioned by name in this official story of Anzac will be a source of the greatest pride to the descendants of the officers and men who took part in that wonderful feat of arms.

The volume is copiously illustrated with excellent maps and photographs. From the mass of information at his disposal, Mr. Bean has succeeded in constructing a connected story, and has made clear the position at Anzac. The account of a tragic enterprise such as this, however pride-inspiring, makes sad reading. We cannot follow the fortunes of these daring men amid the feverish landing at Anzac Beach, and the subsequent harrowing vicissitudes of the fierce struggle among the scrub and rocks of the peninsula, without always having in mind their severe losses, and their subsequent failure. Mr. Bean rightly lays stress on the constancy of spirit shown by the men under conditions of extreme danger and difficulty, and above all on their unflinching determination to be at all cost worthy of Australia.

Apart from our admiration for the clearness with which he has disentangled the essential facts of a most complicated military situation, we are chiefly concernèd here with Mr. Bean's remarks on the medical problems encountered at Anzac. He does not hesitate to criticize the medical arrangements for the reception of the wounded after the landing. On page 233 he states: "Yet on April the 25th and the days following it scenes of appalling suffering were directly due to the inadequacy of the medical arrangements." Again, on page 570, he says:

> "The sufferings of these wounded men were very great. . . . It might naturally have been expected that the worst discomforts would have ended with the journey down the hillsides. On the contrary, the worst began when they left the Beach. Many spoke of it afterwards as a nightmare. Barges crowded with wounded were hauled round in the dark from one transport to another until they found one not already overcrammed. . . . Aboard the improvised hospital carriers conditions existed which may scarcely be described. Many of the wounded had no blankets and no food. In some ships there were no conveniences at all. In the *Lutzow* not even paper was obtainable, and there were only four bedpans for 800 patients."

This is a terrible indictment, and makes very unpleasant and humiliating reading. We have been accustomed to consider that our medical arrangements for war had been well considered in advance. This harrowing tale of suffering patiently endured after the display of wonderful bravery must inspire our deepest sympathy, and make us bow our heads with bitter regret. Mr. Bean lays the blame on the General Staff of the Mediterranean Expeditionary Force He stresses the extraordinary manner in which the General Staff kept the Administrative Staff out of its confidence. He states:

> "This separation of the General Staff from the other departments caused one terrible defect in the plans. This defect was that the making of plans for the clearing of the wounded was undertaken by an officer of the General Staff, and the plan originally produced allowed for no more than 3,000 casualties in the whole army." "Whatever disillusionment, suffering and loss was caused by absence of medical arrangements was due to this obsession that the presence of the 'operations' branch was in some way more important than that of the administrative branch."

Two distinct authorities, it is stated, were concerned with the evacuation of the wounded. The chief medical officer of the 1st Australian Division was responsible for clearing the wounded from the hills to the beach; but from high-water mark to the transports and the base the responsibility rested with the Navy and General Headquarters.

High praise is given to the medical authorities who followed the advance, and to those who worked on the beach. The work of the stretcher-bearers excited Mr. Bean's admiration; wherever the infantry went they went. It was an unvarying point of honour with them to respond to every call; this made their work as dangerous as that of the infantry. The failure to deal adequately with the wounded at Anzac apparently only occurred after they left the beach.

When circumstances of this kind become public and a scapegoat is required, the medical services are usually pilloried, and often unjustly. It is well to bear in mind that in modern military operations the most efficient medical service is often severely handicapped in its arrangements. To make adequate provision for the wounded necessarily requires a knowledge of the extent of the military operations to be undertaken, and a fairly accurate estimate of the casualties expected. Even when estimates are given, they may be hopelessly wrong; and grave difficulties may be placed in the path of a medical officer attempting to obtain what he considers adequate transport facilities.

This state of affairs is bound occasionally to recur so long as the Army Medical Service holds a comparatively subordinate position in the Army. Not to be taken into the confidence of the Operations Staff, as happened at Gallipoli, fatally deprives the Medical Administrative Staff of any opportunity of forming a judgement or of taking adequate steps to deal with the coming situation. To be compelled to sit idly by while medical transport arrangements are being made by others, and then to be blamed for their inadequacy, is, for a medical officer, a situation almost too poignant for words.

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[1] *Official History of Australia in the War of 1914-1918.* Vol. I: *The Story of Anzac.* By C. E. W. Bean. Sydney, Australia: Angus and Robertson, Ltd.; London: The British Australasian Book Store. 1921. (Demy 8vo, pp. xxii+650; illustrated 21s. net.)

NOTES ON BOOKS.

THE twenty-second edition of *Gray's Anatomy*[8] does not differ very greatly from the twenty-first, which was published in 1920. This classical work is still edited by Professor ROBERT HOWDEN, of the University of Durham; the notes on applied anatomy have been revised by Mr. John Clay, surgeon to the Royal Victoria Infirmary, Newcastle-upon-Tyne, and Dr. James D. Lickley, physician to the Children's Hospital, Newcastle-upon-Tyne. Professor Howden acknowledges his indebtedness to Professor Edward Fawcett, of the University of Bristol, who has revised the description of the development of the skull, and to Professor David Burns, of the department of physiology of the University of Durham, who revised the histological part of the book. With the disappearance from the title-page of this edition of the name of Dr. A. J. Jex-Blake (who revised the notes on applied anatomy in the previous edition) apparently the last association between *Gray's Anatomy* and St. George's Hospital has been severed. The first edition was published in 1858, when Henry Gray, then lecturer on anatomy at St. George's Hospital, was aged 31. He published the second edition in 1860, but in 1861, while he was a candidate for the post of assistant surgeon to the hospital, he died of small-pox, at the early age of 34. Between 1863 and 1880 eight successive editions were edited by Mr. Timothy Holmes, of St. George's Hospital, and between 1883 and 1887 five editions were edited by Mr. Pickering Pick, also of St. George's Hospital. Mr. Pickering Pick was assisted in the editing of the next two editions by Dr. Howden, and from 1909—the seventeenth edition—up to the present Professor Howden has been the sole editor. The new edition is only twelve pages larger than the last, but some sixty new illustrations have been added. It is unnecessary to speak of the merits of a work with which all English-speaking medical students and practitioners are very well acquainted, and the volume is as excellently produced as ever.

Potter's *Cyclopaedia of Botanical Drugs and Preparations*,[9] by Messrs. R. C. WREN and E. M. HOLMES, gives an account of all the plants used in botanical or herbalist practice. Only those are mentioned for which there is sufficient demand to give them a commercial value, yet about 3,000 are described. The list includes most of the plants mentioned in the *British Pharmacopoeia* and a host of others which have long since disappeared from official medicine. The herbal name, botanical name, and synonyms of each plant are given, together with a synopsis of the therapeutic action attributed to it, a list of its preparations, and a short description of its distinctive characters. In the case of British plants a line illustration is added. The book gives a large amount of quaint information about the marvellous properties of all kinds of plants which do not appear in ordinary pharmacopoeias. For example, we are told that masterwort (*Imperatoria ostruthium*) is a stimulant, antispasmodic, and carminative, and beneficial in cases of asthma, apoplexy, menstrual disorders, flatulence, and dyspepsia. To many of the official remedies unusual properties are attributed; for example, ergot is recommended for leucorrhoea, dysmenorrhoea, amenorrhoea, spermatorrhoea, gonorrhoea, and enlarged prostate, in addition to its ordinary action as a uterine stimulant. The volume is a very curious link with the past, for it may claim to be a legitimate modern descendant of the herbals of the seventeenth century. "Anything green that grew out of the mould was a wonderful herb to our fathers of old."

The nineteenth volume of the *Ophthalmic Year Book*[10] reverts this year to its original form. This invaluable publication was begun, it will be remembered, in 1903; in 1918 it was merged with other publications in the *American Journal of Ophthalmology*, and vols. xv, xvi, xvii, and xviii were issued in quarterly parts and named *Ophthalmic Literature*. The return to its original form will be appreciated by all; the present volume contains the references in current literature down to December, 1922; that part which deals with comparative ophthalmology contains the references to the subject since 1916. We are confident that no ophthalmic surgeon can afford to be without this excellent work of reference.

How to Become a Nurse, edited by the late Sir HENRY BURDETT from 1899 to 1915, and now, in its tenth edition,[11] revised by E. MARGARET FOX, R.R.C., still justifies its useful purpose by supplying exact information to would-be nurses. The book consists of a detailed list of general, infectious, and mental hospitals in the United Kingdom, Australasia, Canada, and South Africa, with an index.

The twelfth edition of DELAFIELD and PRUDDEN'S *Textbook of Pathology*,[12] revised by Dr. FRANCIS CARTER WOOD, retains its general characters as regards the arrangement of subject-matter, the additions and alterations being confined to textual details and new illustrations. The volume is divided into three sections, the first dealing with general pathology, including etiology, circulatory changes, degenerations, inflammation, animal and vegetable parasites, infectious diseases and the specific fevers, malformations, tumours, poisons, general and metabolic diseases, and the lesions in certain forms of death from violence; the second part comprises the special pathology of the several organic systems; and the third part deals with *post-mortem* examinations and microscopic technique. The subject-matter, therefore, extends over a wide field, and although the volume is large the descriptions are necessarily concise, as is the case in all books of this nature. In view of this fact and of the importance of students supplementing their textbook knowledge by referring to special treatises the author has greatly amplified the references to the literature, so that these form a considerable portion of the text, and constitute a distinct feature of the book. The references are conveniently placed at the foot of the pages containing the subject-matter to which they refer. The book forms a sound basis for the study of general pathology.

[8] *Anatomy: Descriptive and Applied.* By Henry Gray, F.R.S., F.R.C.S. Twenty-second edition. Edited by Robert Howden, M.A., M.B., D.Sc. London: Longmans, Green, and Co. 1923. (Roy. 8vo, pp. xlv+1378; 1,265 figures. 42s. net.)

[9] *Potter's Cyclopaedia of Botanical Drugs and Preparations.* By R. C. Wren, F.L.S., with additions by E. M. Holmes, F.L.S. Third edition. London: Potter and Clarke, Ltd. 1923. (Cr. 8vo, pp. xliii + 392; illustrated. 5s. net.)

[10] *The Ophthalmic Year Book.* Vol. xix. Edited by Edward Jackson and William H. Crisp. Chicago: The Ophthalmic Publishing Company. 1923. (Sup. roy. 8vo, pp. viii+390.)

[11] *How to Become a Nurse—The Nursing Profession—How and Where to Train.* Tenth edition; revised by E. Margaret Fox, R.R.C. London: The Scientific Press, Ltd. 1923. (Cr. 8vo, pp. 358. 4s. net.)

[12] *A Textbook of Pathology, with a Final Section on Post-mortem Examinations and the Methods of Preserving and Examining Diseased Tissues.* By Francis Delafield, M.D., LL.D., and T. Mitchell Prudden, M.D., LL.D. Twelfth edition. Revised by Francis Carter Wood, M.D. New York: William Wood and Co. 1922. (Roy. 8vo, pp. 1344; 17 plates, 809 figures. 63s. net.)

PREPARATIONS AND APPLIANCES.

Novoiodin.

NOVOIODIN is an iodine compound of hexamine, with the formula $(CH_2)_6N_4I_2$; it contains 60 per cent. of iodine, and on decomposition in presence of water it can liberate formaldehyde. It is an amorphous light brown powder, which is insoluble in the usual solvents, but can easily be made into a suspension with oils or glycerin. Novoiodin was investigated in 1911 by Eugling (*Zentralbl. f. Bakt.*, Bd. 60, s. 397, 1911), who found that it had about ten times the disinfectant activity of iodoform, and that the disinfectant action of the drug depended on the liberation of iodine when brought in contact with tissue fluids or pus. Numerous clinical reports have since appeared describing the action of novoiodin as a disinfectant for wounds, teeth, skin, etc. Novoiodin was used extensively by the Austro-Hungarian Red Cross in the recent war. The reports show that novoiodin is a more efficient disinfectant than iodoform, and it also has the advantage of being cheaper and also odourless. It can be obtained in this country through Messrs. Ronsheim and Moore, 11A, Wormwood Street, London, E.C.2.

Tonsil-bed Compressor.

Mr. G. Gushue-Taylor, M.B., B.S., F.R.C.S.Eng. (Barkingside, Essex), writes: In the JOURNAL of July 1st, 1922 (p. 18), appeared a short description of a haemostatic twin tonsil-bed compressor which I had devised for use after removal of tonsils. Extended use of the instrument at the aural department of the London Hospital, and in my hands at Dr. Barnardo's Homes, has proved it to be very efficient. It had a defect in the curve of its blades which has now been remedied, and the form of the blade in the improved instrument allows the swab to be placed in the long axis of the tonsil-bed and to come into apposition with the whole bare area. It is, as altered, more easy to place the swab in the tonsil-bed, and it remains in position more securely and quite comfortably. In one case in which it was applied the child was able to go to sleep with the compressor applied to the bleeding area. The instrument is made by Messrs. Mayer and Phelps, London.

THE MOTOR SHOW AT OLYMPIA.

DEVELOPMENTS OF INTEREST TO MEDICAL MEN.

By H. MASSAC BUIST.

There are many developments of special interest to medical men in the seventeenth International Motor Car Exhibition promoted by the Society of Motor Manufacturers and Traders, which was opened under the patronage of the King yesterday (Friday) in the enlarged Olympia buildings, Kensington, London, and will remain available, Sunday excluded, until Saturday night, November 10th. The prices for admission are half a crown on both Fridays and Saturdays and five shillings on all other days. The prices of the exhibits, alike as regards chassis and complete cars, are those which were fixed by the vendors, and which had to be reported to the exhibition organizers on October 15th. No changes, either in the way of increase or decrease, may be made during the period of the exhibition. The object of this rule is to let the inquirer know precisely how one product compares on the market with another under this head.

This is the majority year of the organizing body, whose series of yearly shows, of course, was interrupted by the war. The new hall adds 65,000 square feet of stand space, bringing the total accommodation to 170,000 square feet, exclusive of the large amount of space needed to provide circulating avenues between the stands. Two other exhibition buildings in the kingdom claim to be larger. But when the figures are gone into it is found that the total area of the given establishment is returned, the implication being that that is available for stand space. The regulation forbidding members of the trade to smoke while on duty at their stands has been repealed. This is regrettable, for the building, large as it is, is crowded throughout the whole period it is open to the public, so that every effort should be made to keep the atmosphere pure. Why should those whose business it is to serve the public and who have wares to sell vitiate the atmosphere?

Over 500 Exhibitors.

This, therefore, is the first post-war exhibition of the sort which has been housed in London under one roof. In spite of the vast amount of space, it is not possible to accommodate all who would display. Several such are perforce excluded; and that after the space originally allotted, but since forfeited by firms which have gone into liquidation and are not eligible under the rules to display, has been redistributed. The natural lighting of the new building by day is all that can be desired, and the convenience of the additional entrance actually on the Hammersmith Road will be greatly appreciated by the public. The new building has also made it possible to increase the catering accommodation, an improvement urgently necessary.

The total number of exhibitors is 526. There is a feeling this year that something should be done in respect of the British industry, the facts being that, on the one hand, it is in a very large percentage of cases placing vehicles on the market at less than the actual cost of production; and, on the other, that the number of passenger cars being absorbed by the buying public in this country this year is, according to the latest registration figures, exactly double the maximum attained in the boom period before the war. The explanation of the parlous case of the British industry in general is that the majority of this increased business has gone to the foreigner, notably to the American trade, to which we are paying £5,500,000 a year. Of course, the real cause is that, in the gross, there are far too many firms engaged in making passenger cars; and this is the only car-producing country in the world where the foreigner is able to do an appreciable business. America puts up an effective tariff wall against British cars despite the fact that her home industry is established on a scale producing 3,000,000 vehicles between January and September, 1923, hence the division of the manufacturer's dead charges over each car to sell reduces that item, very heavy in the case of a British manufacturer, to a negligible sum in the case of an American one. All the vehicles the U.S.A. sell in this country represent extra profit as far as that industry is concerned. The Continental exchanges, of course, favour business in French, Italian, and Belgian cars in this country. German cars are not represented in this show, being still ineligible; but they are on our markets notwithstanding.

The Only Really International Show.

Most of the international trade organizations abroad are modelled on the pioneer body which promotes the Olympia exhibition. But they differ in one important detail. Ours is international in name and in practice: theirs are international in name, but not in practice. Thus a British manufacturer may be a member of the *Chambre Syndicale* in France: but he has no voting rights and, when it comes to exhibitions, he can be allotted stand space only when the native industry has been accommodated. No voting rights could be obtained by a British manufacturer belonging to any of the other national motor trade bodies, either on the continent of Europe or in America. By contrast, in this country the foreigner, or his representative, can be a member of the Society of Motor Manufacturers and Traders enjoying equal voting rights with British car builders and vendors, and the right to secure stand space at exhibitions under precisely the same conditions as obtain in the case of a native. Certainly there is abroad nothing in the nature of a spirit of reciprocity in this matter, a point concerning which the public in general appears quite ignorant. What the average citizen should realize is that we are sending money overseas for a number of commodities which we could produce at home. If we do not order from home sources tens of thousands of skilled workers fail to secure work and, therefore, go on the dole; hence there is a double bill to pay, one direct and the other indirect. The buying public should understand the proportions in which cars of different countries of origin are bought each year so that we may devote any increase in the sale of motor cars in this country to getting some of the out-of-works back into our factories. For instance, the capacity for absorbing motor vehicles in this country with a population of 47,000,000 must be in excess of 80,000 machines a year, particularly as the majority of the cars are small, low-priced vehicles. In this connexion the enterprise of the British industry in pioneering this class of four-cylinder car must be borne in mind. America offers us nothing akin.

How Conditions of Use Govern Design.

All this would be more or less beside the point were the British industry charging for its wares sums out of proportion to their value relative to foreign products. But it must be remembered that cars built abroad have to be suitable, primarily, for conditions obtaining in the countries of origin, and that, therefore, in certain respects the average foreign-built car cannot give the most suitable service judged from the point of view of the special road requirements of this country. It is for this reason that many types of British-built cars, designed with a special view to home service, have been found, year after year, to be unsuitable for conditions that obtain in the British market overseas. That is why America is supreme there to-day. In those countries of relatively few and, outside selected routes, of very makeshift roads, the conditions are the same as obtain throughout the greater part of the United States. Cars designed to fulfil them have not many qualities desirable for home service. Further, from the New World there has not yet come anything that is equivalent to our small, relatively light weight, refined, and high efficiency constructions such as are low taxed and economical in fuel consumption. I do not refer merely to the small car as such, which, as has been pointed out frequently in these columns, is, on analysis, commonly a car of cramped accommodation. Some examples of such practice come to us from the Continent. Nevertheless, most of the pioneering has been done in this class, as distinct from the cycle car, which is of no interest to the medical man. America has never tackled this problem for the sufficient reason that the conditions of her highways and byways render it impossible to find a home market for this class of goods.

The first message of this motor show to the medical man with a strictly limited sum to spend on his car concerns the so-called light cars that are small cars, but which will

nevertheless accommodate conveniently those of normal physique. Of such cars we have constructions of British origin and quality second to none, and to-day they are offered at quite amazingly low prices.

A YEAR OF IMPROVED CARS AT LOWER PRICES.

At the very bottom of the list we have the 2-cylinder air-cooled Rover now made available either with two seats and dickey or with "chummy" body, at £139 each only; this is the cheapest all-British car in the exhibition. We have also the 2-cylinder air-cooled Stoneleigh which, as a 2/3-seater, is available at £155; and in the water-cooled 2-cylinder type we have the 7-h.p. Wolseley available with ample leg room, at £199. Passing to the 4-cylinder category we find the 11.9-h.p. Morris-Cowley listed at £225 as a 4-seater; and a machine that is a classic of its kind, the overhead valve 4-cylinder 10-h.p. engined Wolseley, built by Vickers's motor manufacturing works, is available complete as a 2-seater with dickey at £250 only. There is shown for the first time at this exhibition the new 11.9-h.p. overhead valve 4-cylinder engined Standard that was introduced during the summer, and has been developed. The distinctive point of this machine is that, though it is a light car and is economical as to fuel, taxation, tyre wear, and so forth, nevertheless it is not a small car as regards the accommodation available for the occupants. On the contrary, it is on full-size car scale. Therefore, we have here what is truly the first light car, because in this case lightness is not achieved by any curtailment of accommodation. This machine is available with either 2- or 4-seat all-weather body at £235 only in each case.

HOW COST HAS FALLEN.

What has been occurring in the matter of prices cannot be better illustrated than by citing what has happened during the last three years. For instance, the 10-h.p. Wolseley was listed two years ago at £475; last year at £385, and it has come down this year to £250. Admittedly, in this case there is a difference in the specification as to the material of the upholstery and certain details like that. But the car remains a complete all-weather 2-seater of exactly the same accommodation; and the chassis is improved in detail. In regard to the 2-cylinder Wolseley, the price two years ago was £295; last year it was £255, and this year it is £199. This machine is a better one to-day than it was two years ago. The 8-h.p. Rover was originally introduced after the war—it has been on the market four years—at £300 when prices were at dizzy heights. Two years ago it had been brought down to £220; last year it was listed at £180, and to-day it is available at £139, and, again, we have to consider that this year it is an improved product. The air-cooled Stoneleigh, produced from the designs of Armstrong-Siddeley's engineers, and built under the direction of that firm, was £225 last year and £185 this year; it is available in an improved form for £155 to-day. The prototype of to-day's 11.9-h.p. Standard model had a smaller engine, a smaller chassis, and was altogether a different proposition, not in any way comparable in merit with the new type; yet two years ago that prototype was deemed extraordinarily cheap when it was introduced at £315, and last year, when certain processes of development had been in operation, it was also held uncommonly cheap at £295; but to-day, in a fully developed form with a much larger engine, larger track, longer wheelbase, and ampler accommodation, it is £235

ENTERPRISE IN THE MIDDLE RANGE.

What has been happening in regard to the prices of middle-sized British cars? The same thing. Take the case of the famous 12-h.p. Rover car of 13.9-h.p. Treasury rating. The first cars available after the war cost £725; two years ago the figure was £650; last year it was £550; and to-day the 4/5-seater is £495 in altogether improved form, as instance the standardization of shock-absorbers and the provision of four instead of three speeds forward, together with many other improvements in minor details. This Rover model—proved by medical men years before the war—is now to be listed at its Treasury rating and is styled, therefore, a 14-h.p. (instead of a 12-h.p.) type. Again, take the 14-h.p. overhead valve engined Sunbeam car that was introduced two years ago at £725 and listed last year at £685. The price remains the same to-day as last year; but there is a notable difference in the product. The most obvious of the many improvements included in this type is the provision of special front wheel brake system which this firm, that attained the foremost position in competition last summer by winning the blue ribbon event of the motor racing world, the Grand Prix of the Automobile Club de France, has evolved during many years of first-class, international, long distance road racing. Indeed, it was the first British firm to introduce brakes to all four wheels as standard on its largest 6-cylinder model last year, for the front wheel brakes on the 7-h.p. Austin are of a construction that is not concerned with the particular problems involved in this development. If I could go through the list item by item, it would be found that most cars represent better value for money to-day in that there is more in each machine as listed now than formerly; instance the extraordinary Overland de luxe model, the equipment of which is a catalogue in itself; and which sells for £295. Of course cases could be cited in which prices have been cut in even greater proportions, but I have sought deliberately examples of motor wares for which there is demand, each of which has attained an honourable reputation in its line, and is marketed by firms not forced to jettison their stuff but which are, on the contrary, trying to work at a reasonable commercial profit. That is essential if the motor buyer is to be given service, without which, no matter what price he pays for a car, it is a dear bargain because he cannot get, among other things, spare parts at commercial prices as and when he wants them. Unquestionably a very large proportion of members of the trade and industry is in the position of having goods to jettison, hence prices are being cut right and left. That, however, the individual must judge for himself when he inspects the display. After all, there is a vast difference in the appearance of those machines which are plainly a drug on the market, and those of some pedigree for which there is equally plainly a current demand.

HAVE PRICES AND COSTS TOUCHED BOTTOM?

One of the points concerning which the medical man will certainly be curious is this: How am I to know that if I buy a car now I am getting it at about bottom price, at least for this year? A matter which one would not bring before the public in general may be mentioned here in a semi-confidential way to members of the profession that they may judge for themselves. Dealing with cars for which there is a demand, and without indicating definitely whether the given machine is of British or of foreign origin—I shall cite points which happen to concern both categories—of machines that are being actually built now, as distinct from those which were built some time ago and which have to be got rid of somehow, one manufacturer is being supplied with sparking plugs at 4½d. each though they cost shillings to make; and another manufacturer, also of big output, is being supplied with carburettors at half the bare cost of producing the castings. I could cite examples, too, in regard to electrical equipment and other accessories. In fact, one of the notes of the year is that machines are being supplied with quite an extraordinary amount of auxiliary gear: I will instance the elaboration of the instrument board, the provision of clocks, gauges, reflectors, tyres, and so forth. Here we have the key to the riddle. The accessory industry in general is in a parlous state and much stock has to be jettisoned by some firms. The car manufacturer avails himself of that opportunity both to make his vehicle more complete and to pass the benefit, without any profit to himself, direct to the buyer, because he realizes that it is to the advantage of both parties. Therefore much of the reduction in car prices is due to the fact that the accessory industry in general is supplying the manufacturer at losses that certainly represent an average of 10 per cent. It is a mysterious method by which the bankers seem to be content to keep accessory factories going; if they were not liquidating stock in this way, in many cases they would be closed in three weeks. Those that understand the case can judge for themselves whether accessories to be made henceforth can be produced and supplied under such conditions. I am convinced they cannot. We have touched rock bottom

as far as the accessory maker can render it possible for the car builder to lower his costs. One idea of certain accessory makers, of course, is to get their wares on quantity production schemes, then go to manufacturers on a lesser scale and point out to them that such and such a popular car-builder has placed orders and that, therefore, they will be out of the fashion if they do not have the given accessory. Another aspect is that if the vendor gets a given accessory on quantity production cars, when each renewal is needed the private motorist will buy that accessory—not at the figure at which the car-builder has acquired it, but at a price which will reimburse the accessory maker for the loss he has incurred in supplying the car in the first instance. It is a weird and unhealthy way of business; and I am satisfied from my own investigations that the really sound firms in the accessory industry are standing by and letting anybody's accessory be thrust to the fore, or jettisoned, rather than themselves undertaking to manufacture at a loss. The state of the exchanges greatly complicates this matter. In connexion with steel and other raw materials which the chassis builder needs, the indications are that these will tend rather to rise than to fall.

Facts that make this a Memorable Exhibition.

The outstanding general tendencies this year are, not that there is any appreciable number of new models worthy of attention in what are called the small car classes, but that the smaller middle size chassis, rated anywhere about 14 h.p., is attracting the attention of an increasing number of serious manufacturers, many of whom are listing important fresh contributions under this head, each at moderate prices and designed especially for the owner-driver. There is the new 12/30-h.p. Sunbeam, designed much on the lines of the already well known 14/40-h.p. type—but without front wheel brakes—and which is listed with 4-seat body equipped completely at £570. This is in every sense a Sunbeam product as regards quality. Then there is a new 4-cylinder side valve engined 14-h.p. Bean car with four speeds forward and right-hand control, complete with 4/5-seat body, at £395; and a new 14-h.p. overhead valve 4-cylinder engined three-speed Armstrong-Siddeley car, listed complete as a 4/5-seater of uncommon ample accommodation at £360; the design of the latter is quite unconventional but sound. It is of light weight, the idea being to put on the market a British-built car that will compete with American machines without, however, attempting anything so absolutely futile as to imitate transatlantic methods of construction. The Armstrong-Siddeley is intended to be suitable both for the overseas and for the home markets, and to provide those particular aspects of refinement characteristic of the British car of the higher grade which it is not possible to embody by American methods of construction irrespective of price. This machine works out economically as to prime cost, tax, fuel, lubricant and tyre consumption, the last by reason, especially, of the form of drive and the method of suspension. The long and the short of it is that to-day the medical man can get an all-weather, full scale, middle size car at a price that two years ago he had to pay for a small car of cramped accommodation. Nor is purchase price the only point in that in the interval fuel, lubricant, and tyre costs have fallen amazingly; and carburation efficiency and tyre durability have been increased to an extent which enables middle size car costs under these heads to-day to be quite as economical as light car costs were three years ago. If for this reason only, the exhibition would be memorable in the history of motoring in these islands.

The General Practitioner's Chief Need.

In general there is certainly an increasing desire on the part of the designer to provide more accommodation for the driver and passenger on a motor car. We see this not only in such schemes as have been mentioned already, but also in the Wolseley development of some moderate priced, middle size models wherein the chassis width has been increased and therefore wider bodies have been possible. We have the same effect, too, in the relatively wide new 14-h.p. Armstrong-Siddeley. Another point which is important to the medical man is that there is a tendency not merely to answer the general demand for right-hand control of the brake and gears—the central control is often a nuisance, especially in the season when heavy coats have to be worn—but also to provide, in the case of middle-powered cars, four speeds forward on the Continental principle, instead of three, which has had quite a vogue in this country and which is still very popular in America. Three speeds are adequate to certain constructions provided the engine has flexibility and pronounced acceleration and that the power-weight ratio is favourable. But this is rare. Wolseley this year has furnished four speeds to the 15-h.p., overhead valve, 4-cylinder engined type and many another example of this could be cited, alike in models already familiar and among entirely new types, as witness the 14-h.p. Bean, the new 15/80-h.p 6-cylinder Maudslay, and the new 21-h.p., overhead valve, 6-cylinder engined Lanchester, which last is of interest rather to the specialist than to the general practitioner; as is the new 21-h.p. 6-cylinder four-speed Rover and the new 20/60-h.p. four-speed Sunbeam. For the medical man's service it is essential that a car should have a quick acceleration without straining the engine, which may often be cooler than the precise temperature that represents its most efficient working and the most favourable condition of the lubricant as to viscosity. Most modern engines will "open up well"; but when relatively a short distance has to be run, and comparatively long spells of idleness for the car between stages, so that the engine and gears are generally in a semi-cool condition, it is often possible to assist the mechanism appreciably by having four speeds instead of three. The doctor's problem is much the same as that which has concerned our great passenger-carrying corporations, including the London General Omnibus Company, whose difficulty for years past has been, not how to make vehicles that will travel faster as to maximum speed, but which will be able to accelerate from rest to the normal running speed in minimum time. That is how time is saved between halts. Nobody wants to travel at a mile a minute on his ordinary occasions; but most medical men want to get going from a stand to twenty miles an hour in as few yards as possible. That is where the four-speed gearbox will be of assistance, as is the increasingly general use of a "hot spot" in connexion with the carburation.

Chassis Lubrication Made Easy.

Another point of economy is the welcome spread, especially in regard to middle size and small cars, of grease gun lubrication which was taken up by a few manufacturers last year. Now it is standardized by nearly half the builders of British cars at a popular price. Already it is plain that it will be a universal practice in two or three years. This method ensures the positive entry of the lubricant to the point of the chassis which it is desired to lubricate, and it is made possible to get at those points which have been inaccessible, thereby dirtying the operator, yet, hitherto, failing to achieve the object in view. Overhead valves continue to increase gradually in favour, and it is to be noted that this year those firms employing the system in fresh types are more or less all justified in that they are obtaining greater economy and greater power, which is more than could have been written truthfully about a number of firms that have produced cars with overhead valve engines in past years. The reason appears to have been that it was considered that it would be a selling point despite the fact that the given builders had not gone to the pains, or expense, of acquiring any first-hand knowledge of the why and wherefore of this system of design.

The greatest of all mechanical developments of the year is the wide exploitation of brakes to all four wheels. These are not necessarily required by medical men. Certainly members of the profession must be warned seriously concerning many front wheel brakes furnished to the cheaper classes of cars, again very obviously because it is foreseen that there is to be a vogue for this class of braking. Certain manufacturers are putting such accessories on their cars without themselves having had sufficient experience to appreciate all the problems involved if the system is to be made satisfactory. If it is not, I maintain that it is a positive menace to road users. There are to be seen at Olympia many cars, especially of the cheaper sorts, fitted with four-wheel brakes which will prove dangerous. Unfortunately for our purpose, the law of libel does not allow me to specify them.

A Word of Warning about Front Wheel Brakes.

Therefore the only thing I can do in the interests of medical men is to advise them to inquire carefully into the history of the fitting of front wheel brakes to any given car. Of the French industry in general it may be recorded to its great honour that it has had five years' experience of front wheel brakes. The majority of the French builders of cars of any quality are standardizing systems which embody, in any case, servo mechanism, chiefly under the Perrot-Hallot patents. M. Henri Perrot was the first to discover some of the other basic principles involved in the safe application of brakes to the front wheels. He is really the father of the whole movement. Italy sends a notable version of front wheel braking in the 6-cylinder 30/40-h.p. Fiat, which is a chassis possessing remarkable qualities for the needs of any who may have occasion for a covered carriage to serve often as an economizer of time over the railway service, and which shall be of strictly reasonable prime cost and a high degree of refinement and efficiency. This system should be studied. A bare chassis is shown with the now well proved hydraulic control which this firm has been one of the first to bring to a practical stage, as a result, incidentally, of its unsurpassed experience in first-class racing events.

A note of the year is that Sunbeam was the only firm to standardize last year a front wheel braking system of genuine engineering merit, wherein the problems involved were faced frankly and solved; this year the British industry is emboldened to bring forward great numbers of variants. Moreover, after several years of experimenting the American industry has devised some standardized front wheel braking systems and has, too, provided more types, such as the Marman, than are marketed in this country. But in general it is important to note that M. Henri Perrot, whose patents are worked under licence in America by such firms as General Motors (who market the Buick, the Oakland and Cadillac 4, 6, and 8-cylinder cars that are now fitted with front wheel brakes), has expressed the opinion in writing in the U.S.A. technical press that the American industry in general is in the same state in regard to four-wheel brakes to-day as was the French industry five years ago. As to our own types, several car builders, including Bentley, Daimler, the 21-h.p. Lanchester, Maudslay, Rover, Sunbeam (14/40-h.p., 16/50-h.p., 20/60-h.p., and 24-h.p. types), and Vauxhall have well thought out schemes standardized on certain models. In the cases of the 30-h.p. 6-cylinder Armstrong-Siddeley and the 14-h.p. Bean, and in regard to the 20/70-h.p. Crossley type, such accessories are supplied as extras at the buyer's option. But in regard to the more powerful 6-cylinder cars made in Britain, it is observable that neither Lanchester with the 40-h.p., Napier with the 40/50-h.p., nor Rolls-Royce with the 40/50-h.p. 6-cylinder chassis furnish brakes to the front wheels. The two former, however, have considerably increased the diameter and area of their brakes on the back wheels. Napier is the only firm concentrating on one large 6-cylinder model only, which is available in a longer wheelbase type, and Rolls-Royce introduces a longer wheelbase on the big 6-cylinder chassis.

New Types and New Car Builders.

As Rolls-Royce introduced a 20-h.p. 6-cylinder overhead valve engined car last year, so Lanchester, hitherto concentrating on a large 6-cylinder, introduces this year a 21-h.p., overhead valve, 6-cylinder, monobloc engined chassis with front wheel brakes, four speeds forward, and the Lanchester suspension and worm drive features. Rover introduces a nominal 21-h.p., 6-cylinder, side valve engined, four-speed, worm-driven car with Perrot-type front wheel brakes; Maudslay enters the car industry with a 15/80-h.p., 6-cylinder, overhead valve engined, four-speed chassis of notable design; and Sunbeam introduces a 16/50-h.p. and a 20/60-h.p. overhead valve engined chassis, both with 6-cylinder engines and brakes to all four wheels on the special Sunbeam principle. The 4-cylinder 14-h.p. Armstrong-Siddeley, 4-cylinder 14-h.p. Bean, 11.9-h.p. Standard, and 12/30-h.p. Sunbeam types make their début at the show. Of course, there are introduced some new makes of cars, those that will be seen for the first time at the enlarged Olympia, including the 10-h.p. Triumph that was brought out last summer, the 10.4-h.p. Windsor, the 12-h.p. Westcar, and the 24/80-h.p. "straight-eight" Beverley-Barnes. The last named is a £28 tax, overhead valve, 3,994 c.cm. engine volume machine with a gearbox giving three speeds forward, spiral bevel-driven back axle, brakes on all four wheels at a chassis price of £750. The builders are Lenaerts and Dolphens of Beverley Works, Willow Avenue, Barnes. But despite the chassis price being moderate, this is too ambitious a vehicle for the average medical man. Therefore, in connexion with the problem of designing front wheel brakes in general I may state that it were impossible at this stage to get a better example of what has been learnt in the five years during which these accessories have been employed in France, where over 20,000 individual private owners have had experience of them, than in the 12-h.p., 4-cylinder, overhead valve engined, four-speed Delage car which is on exhibition at the show. Hispano-Suiza, Peugeot, and Renault have also done notable pioneer work in this connexion. That will give an idea of the basic principles that have to be dealt with. It illustrates admirably the Perrot-Hallot servo mechanism and other patented schemes. Among the Americans who work under some of these patents, it is observable that in the Buick car introduced by General Motors the four-wheel braking system works on the principle of shoes expanding in drums on the rear wheels and contracting bands on the front wheels; while in the Cadillac the process is exactly reversed. Continental and British makers do not favour the use of contracting bands for the reason, among others, that it is not possible to get absolutely even pressure over every fraction of the contact surfaces. General Motors is the largest individual corporation in the world producing cars, and in the case of three of its makes (including the Oakland) it has fitted front wheel brakes this year, after several years of experiment. Against this, on the Chevrolet and Oldsmobile cars, which it also builds, front wheel brakes are not furnished this year.

New Light Weight, Silent, Covered Bodies.

Quite the most notable development in regard to coachwork for the medical man is the Weymann cheap, light weight, silent, durable, patented covered body, which was dealt with at some length when the recent Paris Automobile Salon was reviewed. It was shown by Delage and Talbot-Darracq. The system is illustrated at the Olympia exhibition by those builders, and among other licensees, Daimler, Rover, and Sunbeam, who are standardizing this class of body, which can be made as commodious as the chassis can accommodate, yet the total weight will be not more than that of an open body. The principle embodies aircraft engineering practice as regards the construction of the framing, the jointing, the general use of wood, and so forth. Traditional coachwork practice is reversed completely in that the doors, sides, back, and roof constitute one member entirely independent of the floor and seats, which are a separate unit erected on the chassis. The hinges, the cam action handles, the methods of attachment, the grooves wherein the windows slide up and down, and so forth, are each the subject of a patent, the result being lightness, durability, low cost, and absolute silence. The last is a great factor for saving fatigue in the case of those who have to drive more or less all day long, and often at night. It is possible to speak in this type of covered body without raising the voice any more than one does in a room. I have found that to be a true claim. There is no squeak or rattle. This is a type of body, too, which does not lose its original gloss but, on the contrary, looks as well after long use as at the beginning. Against that, it never has the mirror-like, showroom finish of the average car of to-day, which loses its pristine brightness within, unfortunately, less than three months, never to recover it again. Talbot put one of these closed bodies on a 12-h.p. chassis, and it actually weighed 80 lb. less than the open touring type of car. The fabric used for the panelling is synthetic leather, which can be dusted as well as washed by unskilled labour without injury—an important matter, for if one attempts to dust an ordinary car the varnish surface is cut. From that moment the process of deterioration is exceedingly rapid.

Interchangeable Coachwork.

Unquestionably that is the most notable fresh contribution to the problem of coachwork made this year. It is important to observe that these advantages are all obtainable for a lower price than an ordinary covered body. The medical man can have the advantage of using a complete saloon on a chassis which otherwise would be somewhat overloaded with a cabriolet, or coupé, which is bound to become creaky in relatively short time. Moreover, as far as tests have gone, the Weymann bodies have been found capable of withstanding extremely varied climatic conditions such as great heat in the day and cold at night. The warping that occurs in such circumstances is temporary only, for the body recovers its normal form with the subsequent change of temperature. Of course there are other developments of coachwork schemes as standardized on low-priced vehicles. There has not been much improvement as far as open types of bodies with collapsible hoods and temporary side curtaining schemes are concerned; the chief improvements have been in the direction of eliminating rattle and rendering more simple the process of fixing. Observe in this connexion the improvements made in the series of Standard cars. Moreover, interchangeability of component body parts has been achieved, and this firm has devoted a special factory to the building of these bodies. Thus, in the event of a door, or a panel, or window, becoming damaged in an accident, the replacement is as quick, prompt, and economical as possible, in that the given part has merely to be ordered and it will be found that it fits in position exactly. This is made possible by the developed methods of construction and by the materials employed. These bodies are better made as to certain details than transatlantic bodies; certainly, America has not attempted anything so simple and efficient from the point of view of replacement of parts.

Sundry Developments in Detail.

The wheelbase of the Dodge has been increased to 9 ft. 8 in., the body is lower, and the rear springs, which are now of the underslung semi-elliptical type, have been increased from 45 to 55 inches in length. The front ones are also longer as well as wider, being built up of more and of thinner leaves. The brake pedals are larger, the hand-brake and gear levers have been moved forward, giving more leg room and making it easier to get in and out of the body; and a Yale lock has been built into the transmission, rendering it possible to double-lock the car when not in use. The steering wheel has been improved in appearance, all the electrical connexions being inside the column. Louvres have been provided in the sides of the bonnet and the grouping of the instruments on the board is improved. Drum type headlights are employed to harmonize with the new and greatly improved body lines, and a combination of tail lamp and stop signal is mounted on the licence plate bracket on the rear cross member of the frame. This lamp operates automatically, being a valuable "safety first" device. The bodies are now longer and lower, being equipped with deeper seats providing more leg room. The touring car, painted mole grey with nickel radiator, costs £355; the blue sedan with black bonnet, valances, and head, £495; the oriental maroon landaulette with black wings and valances, and nickel radiator, upholstered in antique leather or Bedford cord at option, with English-built body, is listed at £495 also.

Four types of 4-cylinder De Dion-Bouton touring chassis are marketed this year, the 12/24-h.p. being a side valve engined type, the 12/28-h.p. an overhead valve engined type with brakes on all four wheels; the 15/43-h.p. type having overhead valves with four wheel brakes and cantilever rear springs; and the 22/65-h.p. type also has overhead valves and four wheel brakes, together with cantilever rear springs. The first named chassis costs £390, a reduction of £51 7s.; and the complete 3/5-seated all-weather torpedo £540. The 12/28-h.p. model with overhead valves has a wheelbase 4 inches longer, the chassis costing £445, which represents a reduction of £66 7s., from which £20 more can be deducted if front wheel brakes are not desired.

A Contrast in Types.

The Renault range for 1924 includes five chassis; the three smaller have 4-cylinder engines and the two larger 6-cylinder power plant. The smallest in size is the 8.3-h.p. type with 3-seat body, or with two seats and dickey, at £265 complete in each case. The developments in these chassis were dealt with in these columns on the occasion of reviewing the Paris Salon. This firm is one of the three pioneer small car makers of France. A remarkable mechanical development is that some of the practice of the small cars is now applied to the larger and most expensive vehicles also. Of course, the larger types have brakes to all four wheels; only the smallest one is lacking them.

The horizontally opposed, twin water-cooled cylinder engined 9-h.p. Ariel chassis, that was introduced last year, remains unaltered, and in the interval has scored 100 per cent. success in the light car class in the London-Lands End trial. The single shell body standardized has been improved considerably, the rear seat having been widened so that two adults can be accommodated. The retail price of the standard vehicle with 4-seat body is £165 only. What is styled a *de luxe* model—the buyer having the choice of three colour schemes and the standard equipment—embraces all-weather hood, side curtains, hood bag, Dunlop Clipper cord tyres, Lucas five-lamp lighting set, motometer, speedometer, and spring gaiters. It is sold at £180, or, if the Lucas electrical engine starter is provided, for £12 more.

The 10.4-h.p. side valve engined 4-cylinder £11 tax Calcott model is now shown as a 2-seater and dickey type with all-weather curtains for £265 only, a single shell body type being listed at £20 more. In the second named occasional seats are provided behind the two front ones.

Sundry mechanical improvements have been incorporated in the 11-h.p. 4-cylinder side valve engined Hillman chassis, including a dry plate clutch with a neat form of withdrawal gear; also a compensating gear for the brakes. The prices of the 2-seat and 4-seat types have been reduced by, approximately, £90 each, yet the engine running has been improved and the brake application is also praiseworthy. The generously padded upholstery is of real leather and the angles of the seats are well planned. The side panel equipment is now all of metal work finished in dull black, instead of nickel plate, thus reducing the labour of cleaning. The rear side panels can be joined together across the car to form a screen for the back seat. A useful fitting is the provision of a two-way tap in the fuel tank whereby it is possible always to have a reserve of one gallon. The 2-seater is listed at £350 and the 4-seater at £8 more.

The list of new British car types includes a side valve engined 2,121 c.cm. 4-cylinder Arrol-Johnston listed complete at £398; and the Cluley (2,190 c.cm.), Hands (1,870 c.cm.), Meteorite (1,753 c.cm.), and Whitlock (1,753 c.cm.) 6-cylinder cars.

"Comfort" Tyres and Accessories.

As at the Paris show, so on this occasion, a novelty of note is introduced by the enterprise of the tyre industry, notably that of the Dunlop Company in the guise of "giant" section tyres designed to be run at low pressures with safety. The aim is really for the tyre industry to assist the chassis manufacturer in the matter of comfortable suspension; to be quite plain, to hide faults of bad suspension. Hence the wide demand for large section, low pressure tyres on the part of many Continental manufacturers of small cars who have to deal with very bad road conditions and, therefore, have to make their springs much harder than we are accustomed to in this country. It would be an unsafe movement were it not for the fact that the corded system of construction renders the covers very much stronger than before, and that the principle takes into account the stresses of corner work, and so forth, these large section tyres fitting on proportionately very wide rims. Interesting experiments have been carried out in France concerning the effect of these tyres; they have been punctured in racing at a mile a minute without ill consequences. But the majority of Continental expert drivers who have tested them consider that they exercise a certain effect on the steering. Against that the gain in riding comfort is admitted. The Dunlop Company experimented with the type as far back as 1916, when it fitted a 13.9-h.p. Rover car with a set. There are many other exhibits on the stand of this firm, including all the corded sizes; three types wheels—disc, wire, and steel; and so on. Incidentally, th. Society of Motor Manufacturers and Traders has requested

the Royal Automobile Club to organize comprehensive trials of low pressure tyres in 1924.

In the carburetter section interesting exhibits are the Hobson power jet type; and the newest triple diffuser Zenith. There is also a special Zenith type for Morris cars. Other exhibits on the Zenith stand include air stranglers and controls for standard types of carburetters; also a range of special inlet pipe fittings enabling this system of carburation to be applied to any make of car.

A development in connexion with sparking plugs is a miniature Lodge type for use on miniature engines; also for fitting in positions where it is impossible, or difficult, to employ an ordinary size plug. This model is known as C.E. Another Lodge exhibit is the well known priming plug to facilitate starting an engine in cold weather. This ingenious device has been improved in several details.

The Gamage display in the accessory section is a minor exhibition in itself. Incidentally, it is interesting for the wide range of foot-warmers; and the various types of gloves and gauntlets for keeping the hands and wrists warm.

THE NOBEL PRIZES IN MEDICINE.

The Nobel prize in medicine for 1923 has been awarded jointly to Professor Macleod, F.R.S., and Dr. Banting of Toronto; that for 1922 jointly to Professor A. V. Hill, F.R.S., University College, London, and to Professor Otto Meyerhof, of the University of Kiel.

The award to Professor Macleod and Dr. Banting is in recognition of their researches into the action of insulin and its use in the treatment of diabetes. As we have so recently given a full account of these researches, have published Professor Macleod's address to the International Congress of Physiology in Edinburgh, and as we are about to publish his Cameron Lectures on the nature of control of the metabolism of carbohydrates in the animal body, we may be excused from any statement of the grounds which have fully justified the award.

Professor Hill's work is perhaps less well known to the profession. Every member of it will congratulate Professor Hill, who has just succeeded Professor Starling as Jodrell Professor of Physiology at University College, London, on this recognition of his work, and will be delighted at the honour done to medical science in this country. This is the first time that the Nobel Prize has been awarded to an English physiologist, and thus the reproach is removed that the premier school of physiology has been somewhat neglected by the awarders of the Nobel Prizes.

The award of the Prize in Medicine to Professor A. V. Hill, who is a physiologist and who does not happen to possess a medical qualification, is a direct testimony to the belief that the development of medicine depends upon the foundation provided by its basic sciences. In this respect the award is peculiarly significant, for the outstanding feature of Professor Hill's work is that he has applied to the problems of physiology the mathematical methods appertaining to the more exact sciences of physics and chemistry. Professor Hill's early career gave a good indication of his future career, for in 1907 he was third wrangler at Cambridge, and later, in 1909, took a first class in physiology in the second part of the Natural Science Tripos. Similarly he first became Lecturer in Physical Chemistry at Cambridge but afterwards turned to physiology. His great work has been the accurate analysis of the processes which occur during muscular contractions. This investigation called for the most delicate refinements of experimental technique, and was carried out in the early stages on the isolated muscles of the frog. When medical men recall the weary hours they spent in their youth with the frog's gastrocnemius and an induction coil, they may possibly feel a little surprised that anything of good or importance should come from such a source, but the development of these researches has been a brilliant demonstration of the manner in which important practical results follow any increased knowledge of fundamental principles.

The progress of Professor Hill's researches has been roughly as follows:

He first made exact measurements of heat production resulting from muscular contraction, and demonstrated the relation between the quantity of heat produced and the initial length of the fibres of the contracting muscles.

He also showed that the muscle is a machine which in the first instance has 100 per cent. efficiency, and effects the complete conversion of its potential energy to heat or to mechanical energy. The establishment of the relations between the length of muscle and the extent of heat production provided the basis for the "Law of the heart" enunciated by Professor Starling, which explains how the heart can adapt itself to different conditions, and also explains how the process of compensation in heart disease is effected.

Professor Hill next studied the time relations of heat development during muscular contraction, and found that heat production occurred during two periods; first, during the period covering the contraction itself, and then during the process of recovery. Here his work linked up with that of Fletcher and Hopkins, since it was evident that the first phase of heat production, which occurred anaerobically, was associated with the production of lactic acid, whereas for the second phase oxygen was necessary and lactic acid disappeared, so that the muscle was put back in the same condition in which it had started.

The work of Meyerhof contributed to the further analysis which showed that the glycogen of the muscle was the source of the lactic acid, and that in the recovery process between one-sixth and one-quarter of the lactic acid was oxidized, thus accounting for the heat production, while the rest of the lactic acid was reconverted into glycogen, which, on further excitation, could be broken down again to give rise to energy and lactic acid.

Professor Hill in a recent lecture declared that the final experiments in any physiological problem should always be on man, and he has followed this practice in his own researches. In studying the respiration exchanges of man during exercise he found that the process of consumption of oxygen by the muscles in man was identical with that in the isolated muscle of the frog. The presence of oxygen is not necessary for the muscular contraction itself, but since oxygen is essential for the recovery, muscular capacity will soon fail unless abundant oxygen is available for oxidizing a portion of the lactic acid and furnishing energy for replacing the muscle in a condition in which it can contract again. Thus during extreme efforts the body can work at a pace far in excess of its oxygen supply, and, as Hill has put it, the muscle goes into debt for its oxygen during violent exertion; the extent to which this debt can be incurred depends upon the amount of lactic acid which can accumulate without affecting the muscular contraction, and this quantity, strange to relate, is almost identical in the muscle of frog and man. Thus when running a 100 yards race the whole effort practically is made on credit, whereas in a cross-country race the rate at which the competitor can travel is limited by the power of the body, as regards circulation and respiration, to supply the muscle with sufficient oxygen for its current needs.

Professor Hill's researches have thus made possible a much deeper insight into the whole process of muscular activity, whether it be of heart or of skeletal muscles, and have enabled us to form a much clearer conception of the complex intracellular processes which are involved in every vital activity. These conclusions have thrown a flood of light on the conditions regulating violent muscular activity in athletics, and they form a new basis for the study of muscular fatigue. Obviously this new knowledge will be of enormous value in therapeutics—for example, it should be of the greatest assistance in the study of the causation and prevention of heart failure in disease.

Professor Hill's conclusions with regard to the fundamental laws governing muscular activity were supported by the work of Professor Otto Meyerhof, who shares the Nobel Prize. Professor Meyerhof commenced researches on the same subject independently; he studied especially the chemical processes involved in muscular contraction, and showed the nature of the reaction which provided the necessary energy for muscular contraction. His results have confirmed those of Professor Hill in almost every particular and have resulted in more accurate appraisement of the balance of the isolated muscle than would have been possible from Professor Hill's researches alone.

British Medical Journal.

SATURDAY, NOVEMBER 3RD, 1923.

THE SCHOOL OF HYGIENE.

DR. ANDREW BALFOUR has been appointed director of the School of Hygiene. This is the first step towards the creation of an institution which will, we hope, powerfully influence the development of scientific hygiene and preventive medicine in the British Empire, and beyond.

Dr. Balfour's record is such that our confidence in the success of the new school is strengthened. His own contributions to pure research imply an insight into the problems of the laboratory which qualify him to consider sympathetically the views of those who attach importance to that side of teaching which depends upon the stimulus of example rather than precept; his practical experience of men and things frees him from any specialist bias. We have always urged that a combination of administrative and research experience should be found in the director of a first-rate school of hygiene. We are glad that such considerations have guided the Committee in its choice.

The preliminary organization of the School of Hygiene, towards the building and equipment of which two million dollars were offered by the Rockefeller Foundation, has engaged the attention of a Transitional Executive Committee, under the chairmanship of the Minister of Health, for the past six months. Prior to this a site had been secured in Bloomsbury by a committee appointed for this purpose, and the Government had undertaken to provide at a future date a sum of £25,000 annually for maintenance and staffing. Until the school was completed, when the Parliamentary grant would become available, the Rockefeller Trustees promised an annual grant of £5,000 for the salary and administrative expenses of a director. In our issue of October 6th we remarked upon the prolonged delay in the appointment of a director, and we now have the pleasure of congratulating the Transitional Executive Committee upon having secured a man with imagination, tact, discretion, and a wide experience of men and affairs in many lands; one who not only has a broad outlook on hygiene and a tried capacity for research, but has shown himself an eminently practical sanitarian as medical officer of health of the modern city of Khartoum from 1904 to 1913, and later as a member of the Medical Advisory Committee of the Mediterranean War Area. Dr. Balfour, it may be noted, received the C.M.G. in 1912 and the C.B. in 1918. He is fifty years of age, graduated M.B., C.M. at Edinburgh University in 1894, and, four years later, when he took the M.D., gained the gold medal for a thesis on the toxicity of dyestuffs with special reference to river pollution. In 1900 he received the degree of B.Sc. in Public Health (Edinburgh), having already obtained the D.P.H.Camb. in 1897. His numerous publications include a textbook (jointly with Lewis) on *Public Health and Preventive Medicine* (1902), and *War Against Tropical Disease* (1920).

One of the chief needs at the present time is the application of existing knowledge to local conditions, but this can only be done adequately when men are well trained in the underlying principles. There remains much room for improvement in the ordinary teaching of hygiene and the dissemination of existing knowledge both at home and abroad. The provision of sound training will be one of the great functions of the school. As it is only by considering hygiene in its historical perspective that a true notion can be got of all that has been accomplished by the world at large, and particularly by many pioneers of the work in this country, Dr. Balfour has foreshadowed the creation of a great museum of hygiene, which would not only give a graphic idea of the part played by hygiene in the economic development of the empire, but could indicate the gaps which remain in our knowledge and suggest the lines upon which the most useful practical results might be expected from research.

It is probable that a large proportion of the students in a school situated in London will be men preparing to enter the public health service of this country, and the school must therefore provide a normal course of study furnishing the technical and scientific equipment prescribed as essential by the General Medical Council. It would be wholly wrong if students whose aspirations do not extend beyond these requirements should not find in the school what they need, but it is evidently the purpose of the Executive Committee, as it was the intention of the Rockefeller Foundation, that the new school should be essentially imperial in scope, and should become a centre to which other nations may also bring their problems for practical assistance towards their solution. But it is obvious that the endowment of £25,000 promised by the Government will be inadequate for the proper staffing and maintenance of the teaching appointments and research departments of the new institute, and that the Transitional Executive Committee must so direct its policy as to secure the inclusion under the charter of the new school of the goodwill and endowments of other bodies already engaged in the same work. May it not be that here is the dawn of the coming of a great school of post-graduate medical studies in London?

A really great school is one all of whose professors are enthusiasts for their special subjects, but also broad-minded enough to recognize that no single branch of science is either self-sufficing or all-embracing, and are prepared to work loyally together under the chairmanship of a broad-minded and experienced director.

In a country such as ours, proud of ancient and famous educational establishments, a new college must struggle hard to secure any measure of popular prestige. All Englishmen are tinctured with academic conservatism; it is not only the alumni of Oxford and Cambridge who respect the ancient universities more than those founded in our own time. So the task before Dr. Balfour and his future colleagues is not a light one: they do not inherit the prestige of a long series of illustrious predecessors; they have behind them no tradition—they themselves must create what shall become a tradition. Upon their singleness of purpose everything depends. The best wish we can utter is that when, in the fullness of time, Dr. Balfour comes to give an account of his directorate, he may be able to apply to himself and his coadjutors the words of Henry V, "We few, we happy few, we band of brothers."

VACCINATION PROPAGANDA.

A few months ago (July 14th, p. 72) we devoted some space to the present position with regard to vaccination propaganda, and called attention to the excellent little tract expounding the value and importance of vaccination issued by the Ministry of Health.[1] The paper by Dr. Killick Millard published on September 29th leads us to recur to the subject, as he raises certain matters not dealt with in our earlier article. Dr. Killick Millard stated that in 1906-20—a period, by the way, of fifteen and not sixteen years—"even the registered deaths from vaccinia amounted to 165, and it has recently been admitted, in answer to a question in Parliament, that by no means all the deaths due to sepsis following vaccination are debited by the Registrar-General to vaccinia." We have thought it well to make inquiries of the Registrar-General's department, and learn that the 165 deaths included every case in which sepsis or erysipelas following vaccination was mentioned in a death certificate. Not only so, but the 165 deaths also included cases of such diseases as bronchitis, pneumonia, diarrhoea, mentioned as following vaccination. Indeed, the practice was to debit the death to vaccination unless correspondence with the certifying practitioner—as occurs occasionally in connexion with certificates of doubtful meaning—made it clear that he did not regard the vaccination as in any way a contributory cause. Of the 165 deaths, 92 occurred in the eleven years 1910-20, and this 92 included only 41 attributed to "vaccinia"—and that term, as used in the Registrar-General's reports for these years, included much more than the rare condition sometimes described pathologically as vaccinia or general vaccinia.

It seems desirable to make clear the whole position with regard to such cases. In 1911 the classification of deaths in general was modified in this country, owing to the adoption of the international list of causes. This involved substitution of the class "Vaccinia" for the old class "Cow-pox and other effects of vaccination." At the same time occasion was taken to revise the entries in the class. It was deemed best to continue to ascribe to vaccination cases where it was mentioned in certificates of death from diseases like those named above—bronchitis, diarrhoea, and so forth. But in respect of sepsis or erysipelas there had always been a want of uniformity which it was thought right to rectify. Where sepsis or erysipelas followed an insect bite, or any scratch or slight puncture or abrasion of the skin, the death had always been attributed to sepsis or erysipelas as the case might be, and not to the trivial lesion which had given opportunity for the infection. But where that lesion chanced to be a vaccine vesicle the death had been set down to vaccination, and it was necessary, in accordance with the international list, to correct this anomaly by classifying any such death as due to sepsis or erysipelas just as in other cases. The change generally was explained in the Registrar-General's report for 1911.

That, however, is not all. For purposes of comparison the Registrar-General in his annual reports gives in respect of every separately tabulated cause of death the figures for a series of previous years. To continue this practice a kind of double entry was required for the years 1911-20, wherever the classification had been changed. Besides the new entries under vaccinia, the old entries under cow-pox and other effects of vaccination were given in a retrospective table, and it was only in 1921 that the double entry could be dropped. But a paragraph in the text of the report for 1921 gives the information which will enable anyone to transfer such deaths to the vaccinia column, so that the opponent of vaccination can add what he pleases to the Registrar-General's table. Regarding 1921 the present Minister of Health, Sir William Joynson-Hicks, in answer to a question in Parliament by Mr. Snowden, said that "vaccination" was mentioned on 7 certificates of death and "general vaccinia" on one. They were classified as follows: 3 due to vaccination, 3 to erysipelas, 2 to purulent infection, septicaemia.

We may take this opportunity of referring to another point in Dr. Millard's article. In writing of the attitude of the medical profession he asserted that when the conscience clause was proposed "we opposed it for all we were worth," and "we said it would result in a further neglect of vaccination." Dr. Millard's "we" is not a precise expression, and we desire to point out that it does not include the British Medical Association; far from opposing the conscience clause "for all it was worth," the Council of the Association was prepared to accept the clause, if only the law and the clause were to be applied not merely to infant vaccination, but to revaccination, which ought to be legislated for like infant vaccination. That was the official attitude of the Association, and the adoption of its proposal would have got rid of the anomaly of legislative pressure being applicable only to primary vaccination, though revaccination is also required for continued protection against small-pox. Moreover, domiciliary vaccination was begun along with the operation of the conscience clause, and Dr. Millard is mistaken when he asserts that "a further and serious decrease in vaccination followed." On the contrary, the percentage of vaccinations to births, which had fallen to 62.4 in 1897 and to 61.0 in 1898, began to rise immediately, and continued to be over 70 per cent. (in one year 75.8 per cent.) until the baleful Act of 1907 took effect. That Act was at once followed by a decline in infant vaccination, which has continued ever since.

Most fortunately for the public welfare the type of small-pox in this country, as is well known, has commonly in recent years been mild. This has done much to avert the punishment which would have followed the neglect of vaccination had the European variety of the disease continued to prevail. Gloucester and Leicester have been amongst the principal beneficiaries, though far from frankly appreciating their good fortune. Even 38 per cent. of infant vaccinations, as in 1921, is, however, much better than nothing, and the profession would be falsifying its whole position by giving any countenance to Dr. Millard's suggestion for repeal of all obligation towards vaccination, on the hypothesis that thereby, when epidemic small-pox reappears, vaccination would be more readily accepted by the public. Parliament may do what it likes and the consequences will be on its head. The medical profession can have no part in such political opportunism, and the newly improved administration of the existing law is welcomed as an indication of the present Government's recognition of its duty to the helpless infants who are allowed to run the risk of small-pox, mild or severe, owing to the indifference of their parents.

[1] Reports on Public Health and Medical Subjects. No. 8. Small-pox and Vaccination. H.M. Stationery Office. 1921. Price 3d. net.

THE INSURANCE CRISIS: EMANCIPATION.

THE Minister of Health has receded from his original position, and has given explicit assurances on certain matters to which the Insurance Acts Committee attaches supreme importance, although complete satisfaction has not been obtained. Representatives of the Insurance Acts Committee saw the Minister on two occasions on October 30th; the first meeting was occupied in preliminary discussions. The declaration of the Minister, published in the SUPPLEMENT this week, makes two things clear. One is that medical benefit is a primary benefit, and that there is no title to additional benefits until this and the other primary benefits—sickness, disablement, and maternity—are satisfied; the other is that the remuneration of practitioners is to be settled on its merits, and agreed by negotiations between the Minister and the profession.

The demand of the profession that an inquiry, by Royal Commission or otherwise, should be impartial and comprehensive, and should embrace the whole field of the insurance scheme, including finance and the administration of Approved Societies as well as medical benefit, has been accepted. The scope of such an inquiry is guaranteed by the undertaking that the medical profession shall be consulted as to the exact terms of reference to the Commission. On the financial side there is also some gain. Alternative proposals are made. The offer of the Minister covering all the points which have been the subject of negotiation will be submitted to the Special Conference of representatives of Local Medical and Panel Committees which has been summoned for November 14th, and it will be for the Conference to take into consideration the specific alternative offers under the head of remuneration. These are, on the one hand, a separate and immediate inquiry into the appropriate capitation fee for 1924; or alternatively a guaranteed fee of 8s. 6d. for five years, instead of three as originally proposed. During this period of five years the wider inquiry of the Royal Commission would be proceeding. Meanwhile, in view of the statutory requirement that two months' notice must be given, the resignations of insurance practitioners were placed in the hands of the clerks of Insurance Committees throughout the country on October 31st. Whether they become operative on January 1st or are withdrawn will depend on the decisions of the Panel Conference.

Throughout the negotiations the Committee has been careful to stress the claims of rural practitioners, and it is satisfactory to find that it has succeeded in inducing the Minister to guarantee the setting aside of a sum of £250,000 for the year 1924 (as against approximately £210,000 in the present year) as an addition to remuneration.

The hands of the Insurance Acts Committee, in conducting the negotiations, have been greatly strengthened by the knowledge of the manner in which resignations have been tendered—the final result being that 94 per cent. of the insurance practitioners of Great Britain have resigned. The whole medical profession will rejoice with the insurance practitioners in the fact that the profession has shown such remarkable unanimity and determination, and that this action has resulted in clarifying the position of every member of the profession, whether an insurance practitioner or not, in regard to State service. It has made it clear and authoritative that in relation to services rendered to the community the profession stands untrammelled by unconstitutional claims or pretensions on the part of any particular section of the community.

THE MEDICAL INSURANCE AGENCY.

A MEETING of the Committee of Management of the Medical Insurance Agency was held at the house of the British Medical Association on Thursday, October 25th, when, in the absence of Dr. G. E. Haslip owing to indisposition, the chair was taken by Dr. H. A. des Voeux. Other members present were Dr. E. Weaver Adams, Lieut.-Colonel R. H. Elliot, Dr. R. A. Gibbons, Dr. R. Langdon-Down, Sir Dawson Williams, Sir Squire Sprigge, and Mr. W. E. Warne. The secretary presented the audited balance sheet for the year 1922, together with the chairman's report thereon. A very interesting detailed schedule showed the great and rapid progress made by the Medical Insurance Agency during the last eight years. The premium income increased from £12,104 in 1915 to £37,936 in 1922, whilst the commissions, etc., earned rose from £1,950 in 1915 to £5,250 in 1922. For the third year in succession policies totalling over £100,000 in sums assured in respect of life and endowment assurance were arranged through the medium of the agency, bringing the total sums assured up to December 31st, 1922, under these heads to over £700,000. Business in fire and accident insurances has increased; the convenience of paying one premium for all household risks under a flat rate is apparently much appreciated. An interim report by the Chairman for the nine months ended September 30th, 1923, stated that the popularity of this comprehensive household contract continued. In spite of a decline in life assurance business experienced by all offices, and in spite of the existence of keen competition, the agency negotiated 62 new life policies during the period. One of the advantages—and not the least—of the Medical Insurance Agency is that members of the profession can obtain from it personal advice as to the particular kind of policy to meet the individual's particular needs. During the Annual Meeting at Portsmouth no fewer than fifty-five interviews took place, and it was found possible to adjust several delicate or peculiar matters to the satisfaction of the applicant. The amount of business in insuring motor cars done by the Agency increased during the year, but bearing in mind the large number of cars now used by members of the profession it is believed that the amount could be considerably increased. Motor car insurance is a specialized business; accidents are more heavy and frequent than in almost any other form of insurance, and members of the profession would be well advised to take advantage of the security offered them to obtain fair and equitable settlements by insuring through an agency so strong and influential as the Medical Insurance Agency. The Committee has for some time felt that the benefits already conferred upon the profession might be increased were it in a position to obtain for the person insuring through it advice on all matters affecting the purchase and use of motor cars. An arrangement has now been made with the firm of Mann, Egerton, and Co., Ltd., to advise members free of charge, either directly or through the medium of the Agency, on any problems, difficulties, disputes, or technical matters relating to motor cars, including motor coachwork and accessories; to give advice as to the suitability of any particular car for any class of work or type of district; to undertake the periodical inspection of members' cars at a moderate fee; to give expert advice as to the mechanical condition of members' cars, and the advisability of repairs, and to prepare specifications and estimates for repairs to mechanism or coachwork, or for the manufacture of special bodies to meet particular requirements, and generally to place their entire resources at the disposal of members, both in London and throughout the country. The firm has been established over twenty-five years; it possesses experience, a staff of experts, and large works at Ipswich, Norwich, and in London (156, New Bond Street, and 1A, High Road,

Kilburn). The firm will place at the disposal of purchasers of cars, through the Medical Insurance Agency, their system of deferred payment; a purchaser pays 25 per cent. of the value on delivery and the balance by monthly or quarterly instalments as desired. An addition of 2½ per cent. to the list price of the car is made to cover interest charges. The company has a stand (No. 129) in the Coach Building Annexe of the Olympia Show, and its representatives will be prepared to give advice free of charge to medical men intending to purchase on the advice of the Medical Insurance Agency. Application for an introduction should be made to the Secretary of the Agency, 429, Strand, London, W.C.2. It appeared from the balance sheet of the Medical Insurance Agency for the year 1922 that a sum of over £2,000 had been returned by way of rebates to those insured through the Agency, an increase of £367 over 1921. The surplus carried to the Medical Benevolent Fund was slightly larger in 1922 than in the preceding year, and a sum of £1,500 was allotted as follows: to the Royal Medical Benevolent Fund Guild £630, to the Royal Medical Benevolent Fund £315, to the Epsom College Benevolent Fund £210, to the Royal Hospital and Home for Incurables, Putney, £52 10s., the *Lancet* Editor's Discretionary Fund for dealing with emergency cases £25. A further sum of £267 10s. was set aside for the fund established by the Agency to make grants in aid of the education of girls, orphans of medical men, or daughters of unfortunate brethren who are precluded by age or ill health from continuing to practise. Including the contributions now made the total sum subscribed to medical charities by the Medical Insurance Agency since 1910 exceeds £11,500.

THE HEALTH OF THE SCHOOL CHILD.

SIR GEORGE NEWMAN'S report for 1922 as Chief Medical Officer of the Board of Education has been issued this week. It contains twelve chapters. In an introduction he gives a general review of the situation and observes that in spite of the restrictive effect of the policy of public economy the year 1922 was not a time of reaction. Though the new weapons for the warfare against disease and neglect amongst school children could not be used to the extent intended, the scheme remains intact and ready for fuller application whenever circumstances permit. Ten years ago the only statutory obligations in connexion with medical services were the medical inspection of children in elementary schools, and special education for the blind and deaf. Medical treatment was purely optional, and so was the provision of special schools for the mentally and physically defective. Now treatment as well as inspection is obligatory, and it is the duty of every education authority to make comprehensive provision for all abnormal children. Some authorities, however, are behind-hand, and the inequalities between various areas must be reduced gradually and a minimum standard everywhere attained. The pause in expansion has been utilized by the Board to determine the general nature of future development. The standards of abnormality, which at present vary in different areas, must be investigated and harmonized, though due provision of special schools for the defective is expensive. It costs about £12 a year to educate a child in a public elementary school, £30 in a day special school, and £90 in a residential school. But knowledge of the causes and methods of prevention and treatment of fundamental defects is extending, though there are not yet accepted and reliable standards of mental defect. Reference is made to the widely different practice of different authorities in respect of requiring payments for medical treatment from parents, and the Board has had to take action. Free treatment must now be definitely restricted to the necessitous, though this may diminish attendances where no fee had hitherto been exacted. The organization of physical training in elementary schools has made good progress. The fundamental points are that the work of training should be carried out by the teachers themselves, who should from time to time have special assistance and guidance from experts. The great value of good work is testified by quotation from Dr. Wheatley, county medical officer for Shropshire. Unfortunately, skilled training organizers are few, and the cost of their services is apt to deter local education authorities from making such appointments. Meals for school children involved a very heavy outlay in 1921 owing to the coal strike, and much attention was given to limitation of expenditure in 1922. Sir George Newman, however, is satisfied, as a result of certain careful inquiries by school medical officers, that in spite of unemployment the nutrition of school children was not below the pre-war standard, and in some cases was appreciably higher. The most urgent questions awaiting solution are said to be the further co-ordination of the school medical work with the public health service, attention to the physical condition of children under 5, and effective education of the dull or backward child. The importance of a comprehensive scheme for the treatment of dental defects is recognized, as is the systematic organization of the teaching of hygiene and physical training. We hope in an early issue to deal further with this interesting report. It is published by H.M. Stationery Office, price 1s. 6d., and can be obtained through any bookseller.

POST-GRADUATE WORK IN MELBOURNE.

UNDER the auspices of the Melbourne Permanent Committee for Post-Graduate Work, regular general and special courses for graduates are arranged every year. The committee is composed of representatives of the Faculty of Medicine, the Council of the Victorian Branch of the British Medical Association, the Walter and Eliza Hall Institute of Research, and the metropolitan general and special hospitals. The courses arranged by the committee, for which Dr. J. W. Dunbar Hooper and Mr. Harold Dew are the enthusiastic honorary secretaries, have been signally successful. No better evidence of the attractive nature of the work provided could be furnished than the fact that a number of graduates have journeyed regularly from remote parts of Australia to attend the classes. The most recent attraction organized by the Melbourne Permanent Committee for Post-Graduate work was a series of four lectures on disorders of nutrition delivered by Professor C. J. Martin, F.R.S., Director of the Lister Institute, London, who was visiting Melbourne as a delegate to the Pan-Pacific Science Congress. The Permanent Post-Graduate Committee is endeavouring to establish a fund by means of which it will be able to obtain the services of distinguished leaders in research whose work will furnish not only instruction but a stimulus to medical men to keep up to date. By great good fortune Professor Martin was available as the first lecturer under this scheme. At the same time Professor Martin's visit to Melbourne afforded great pleasure to many of his old friends and former students. As professor of physiology in the University of Melbourne, and later in close association with the Australian Army Medical Corps during the war, Professor Martin made many enduring friendships in Australia.

ALCOHOL TAXATION AND DELIRIUM TREMENS IN DENMARK.

EACH of the four Scandinavian countries is at present conducting different legislative experiments in the control of alcohol consumption. While one country rations the supply of alcohol, another attempts to enforce prohibition, and a third—Denmark—attempts to encourage sobriety by

making the cost of alcohol almost prohibitive. The year 1917 was one of legislative ventures in Denmark. For a very brief interval the total prohibition of spirits was attempted, the law of February 27th forbidding the sale and serving of spirits. This law was revoked on March 23rd of the same year, since when there has been no prohibition in Denmark. But in that month the retail cost of spirits was doubled by taxation, and on December 21st, 1917, the taxation of spirits was further raised so that a bottle of spirits which had cost 70 öre before the war could not be bought for much less than kr. 10. In a paper recently published by Dr. K. H. Krabbe[1] an attempt has been made to investigate the influence of this legislation on the sobriety of the Danish nation. He observes that it is difficult to compile statistics dealing with chronic alcoholism, partly because there are no hard and fast lines within which this condition can be defined, and partly because the personal equation (that is, the opinion of the individual physician) is variable. But there can be no mistake about the diagnosis of acute alcohol poisoning or delirium tremens, which seldom occurs in an abortive form. The actual number of such cases may not be an index to the number of cases of chronic alcoholism in the same community, but a study of the yearly fluctuations in the number of cases of delirium tremens should afford a rough guide to the fluctuations in the incidence of chronic alcoholism. At any rate this is Dr. Krabbe's opinion. His statistics deal with the number of cases of delirium tremens admitted every year to his hospital since 1903. In the period 1903-16 this number ranged from a minimum of 249 in 1915 to a maximum of 447 in 1907, the average for this period being 321 a year. In the period 1918-22 the number of these cases ranged from a minimum of 9 in 1918 to a maximum of 26 in 1921, the average being 15 cases every year. (In 1922 there were only 11 cases.) It will thus be seen that 95 per cent. of the anticipated incidence of delirium tremens had been eliminated. Dr. Krabbe considers there can be little doubt that this decline in the incidence of delirium tremens did not merely coincide with the imposition of heavy taxes on spirits, but was the direct outcome thereof. He raises the question: Would it be possible by total prohibition to eliminate the remaining 5 per cent. of the anticipated cases of delirium tremens? He answers this question in the negative, assuming that this 5 per cent. dreg represents those members of the community who must have their liquor at all costs, and who, if spirits are prohibited by law, obtain it by smuggling or distilling it at home. Failing these alternatives, there is yet the possibility of drinking methylated spirits or ether. The lesson which Dr. Krabbe draws from his figures and from a comparison of conditions in Norway and Denmark is that high taxation of spirits has quite as sobering an effect on a community as prohibition, the circumventing of which has a demoralizing effect, encouraging a contempt for the law of the land.

[1] *Ugeskrift for Laeger*, September 20th, 1923.

PREVENTION OF SIMPLE GOITRE.

THAT "simple goitre is the easiest of all known diseases to prevent" is the thesis of a series of twelve papers by Drs. David Marine, C. H. Lenhart, and O. P. Kimball,[2] collected together and edited by Professor G. N. Stewart, director of the H. K. Cushing Laboratory of Experimental Medicine, Western Reserve University, Cleveland. The conclusion is based on more than ten years' work on comparative and experimental medicine, commencing with an investigation into the so-called thyroid carcinoma of brook trout, which was shown to be really hyperplasia or simple goitre. At one time the number of cases of this goitre among members of the salmon family artificially raised became so great that many hatching establishments were abandoned. It was then discovered that the disease could be prevented by the addition of very small quantities of iodine to the water, and this prophylactic method was afterwards employed with great success in children's schools in the region of the Great Lakes, where goitre is extremely prevalent. The amount of iodine necessary to prevent the development of simple goitre is small; two grains of sodium iodide daily for ten days in succession twice a year, in the spring and autumn, was found to be efficient as a routine, and oral administration was found to be more practical and economical than external application or inhalation (by hanging a wide-mouthed bottle of 10 per cent. solution of iodine in the schoolroom). Among 2,190 pupils in the Akron public schools who were thus treated 5 showed thyroid enlargement, while out of 2,305 pupils who did not take the prophylactic 495 have shown thyroid enlargement. Out of 1,182 pupils with thyroid enlargement at the first examination who were then treated, 773 showed diminution of the thyroid, whereas among 1,048 pupils with thyroid enlargement who did not take treatment 145 only showed diminution in the size of the thyroid. The incidence of any untoward symptoms from this treatment among 3,000 girls, many of whom took it for three years, was less than 0.5 per cent., and then was merely a mild iodide rash. The use of iodide in goitre has been thought to be dangerous and to cause exophthalmic goitre; any bad effects observed were, it is suggested, due to excessive doses of iodine. The authors hold that though the ultimate cause of simple goitre is still unknown, the immediate cause is lack of iodine. This view is thought to be supported by the observation that in hyperplasia of the thyroid iodine is always deficient. A certain minimum content of iodine is, they believe, necessary for the maintenance of the normal or colloid state of the gland, the stainable colloid varying inversely with the degree of hyperplasia and directly with the iodine content. Simple hyperplasia is prone to occur at three periods—in foetal life, in adolescence, and during pregnancy; it is approximately two to three times as frequent in girls as in boys; in the majority of boys it is congenital, and can be prevented by giving iodine to the mother during the pregnancy. Thyroid hyperplasia of congenital origin is recognizable by the persistence of thyroid tissue in the position of the thyro-glossal stalk; the so-called lingual and infrahyoid thyroids have, it is believed, the same significance. Holding these views, the authors maintain that while the prevention of simple goitre in pregnancy and foetal life depends on the directions of individual medical men, the prophylaxis of goitre in adolescents is a suitable matter for public health measures. They are undoubtedly right in saying that prevention of thyroid hyperplasia is of far-reaching importance for countries where it is endemic; it would mean the control of cretinism and possibly of other forms of physical and mental degeneration; it would be reasonable also to expect a diminution of the number of thyroid adenomas, which in their turn give rise to cystic change, and probably are the antecedents of 90 per cent. of malignant thyroid tumours.

[2] *Western Reserve Univ. Bull.*, Cleveland, 1923, xxvi, 1-123.

MILK-BORNE DYSENTERY.

THE Ministry of Health has published a report[1] by Dr. George C. Hancock and Mr. P. Bruce White, on an outbreak of dysentery at Lynton, Devon, in October and November, 1922. When the outbreak came under notice investigation quickly excluded water supply, sewerage, and excrement disposal from any causal responsibility. As to milk, however, all but 2 of 18 cases received milk from one source, and of 52 households using that milk 9 were affected. The farmer and three employees were ex-soldiers, and it was only about a month after dairying had been

[1] No. 20 of Reports on Public Health and Medical Subjects. H.M. Stationery Office. Price 4d. net.

begun that the first case of dysentery occurred. Blood specimens implicated the farmer and his foreman, but even before the cause of the outbreak was definitely established the farmer had voluntarily withheld the sale of his milk, a praiseworthy instance of intelligent and disinterested co-operation. The number of households ultimately affected was 11, and of the 18 cases 13 were below the age of adolescence. Multiple cases occurred in 5 households, and case-to-case infection may have operated. The outbreak was of long duration, and the period during which one of the two men implicated was presumably a carrier of *B. dysenteriae* was of unusual length. He had been invalided from the army in 1918 after suffering in the East from symptoms suggestive of dysentery, and had not since suffered from diarrhoeal disease. The bacteriology of the outbreak is reported in careful detail by Mr. Bruce White. Both *B. dysenteriae* Flexner and *B. dysenteriae* Shiga were found. The presumption would seem to be that Shiga cases in children occurred before the investigation and were fatal, while the Flexner infection did not cause severe symptoms in adults. Dr. Falkner, the medical officer of health, took an active part in the inquiry, and had already set on foot bacteriological investigation before the central authority was called in.

INSULIN BY THE MOUTH.

It has been advised that insulin should be given by subcutaneous injection to diabetic patients on the ground that it does not produce any effect when given by the mouth. Dudley and others have proved that insulin is rapidly destroyed by pepsin and trypsin *in vitro*. It is probably for this reason rather than the failure of insulin to pass the intestinal wall that the administration of pancreatic extracts by the mouth has been relatively ineffective. There is evidence that insulin may be absorbed from the stomach when given in alkaline solution, the effect of the alkali being not to neutralize the acid but to inactivate the pepsin. Large doses of insulin would appear to be necessary to produce any effect. It is known that water is not absorbed from the stomach, but that alcohol is. This suggested to L. B. Winter that the administration of insulin by the mouth might be more successful if it were given in weak alcoholic solution. He has recorded in the new number of the *Journal of Physiology* certain experiments on the rabbit. The insulin was dissolved in 15 to 25 c.cm. of 20 per cent. alcohol, warmed to body temperature, and administered by the stomach tube. In the first experiments large amounts of insulin or yeast extract were used, with the result that the blood sugar quickly fell to the convulsion point. It was evident, therefore, that the insulin must have been rapidly absorbed from the stomach. Smaller quantities of insulin were then used, and it was found that the amount of blood sugar was reduced, although convulsions did not actually occur. It is well known that the response of different animals to subcutaneous injection of insulin varies, and this is a source of uncertainty in the testing of preparations. Still greater uncertainty must attach to experiments in which the extract is given by the mouth, but the blood sugar values are held to show that the effect of insulin on animals is similar, whichever method be used. If large doses were given the blood sugar was reduced very rapidly; if small doses the fall and rise were both slower, but the action of insulin given by the mouth was not delayed. That the alcohol was responsible for the absorption of the insulin was shown by a control experiment in which insulin dissolved in normal saline was given by the mouth. No effect on the blood sugar was observed. The conclusion is that insulin in weak alcoholic solution, administered to rabbits by the mouth, causes the blood sugar to fall to a low level. We gather that the investigation has not yet been extended to man.

THE GARDNER COLLECTION AND LONDON MEDICAL TOPOGRAPHY.

From November 12th to 16th next there will be dispersed at Sotheby's, New Bond Street, the second portion of the great Gardner collection of London topography which is said to include altogether more than 50,000 prints, drawings, etchings, and other illustrations of old London. The items of medical interest disclosed by the catalogue may quite possibly omit many which a detailed examination of the parcels themselves would reveal; for many of the lots include twenty, thirty, or even forty items, only one or two of which are specified by the catalogue. Among those which are, however, thus distinguishable may be mentioned the following: the old Chelsea Physic Garden, of which there are apparently many different views; and Chelsea Hospital, of which there are even more; John Hunter's house at Earl's Court (where the District Railway station now stands); St. George's Hospital, of which there are several views, including the rare print by J. Ware; the Lock Hospital in Grosvenor Place, with a portrait of Daniel Lock; Windmill Street—the catalogue does not say whether this shows the Anatomy School for which that thoroughfare was famous. Golden Square, probably antedating the time of the Throat Hospital, is shown in a rare engraving by Nicholls and in other items. The interior of an old "doctor's shop" in Walker's Court is another from the same district in Soho. One of the lengthy series connected with the Covent Garden neighbourhood shows "Dr. Rock, Dr. Bossy, Martin Vanbutchell and other Quacks." Clare Market, Portugal Street, and (old) King's College Hospital make up three lots, including together forty-three items. The College of Surgeons in various views and portraits of celebrated surgeons—twenty-three items in all—are to be sold in one lot. Westminster is copiously represented in the sale, but the catalogue does not indicate whether any views of the Westminster Hospital are to be found. Nor does the Charing Cross section allude to either of the hospitals now situated there. The College of Physicians is listed with various other views of Pall Mall East and Whitcomb Street. The collection is to be on view to the public three days before the sale opens.

CLEAN MILK.

A pamphlet on clean milk has been published recently by the Kent Milk Recording Society; it contains a full report of the first clean milk competition held by it last spring in conjunction with the Kent Education Committee. The four purposes of this competition were as follows: (1) to show that there was already available a supply of clean milk in the county in addition to that sold as Grade A and as certified milk; (2) to assist dairy farmers by milk examinations and by advice as to possible improvement of their methods; (3) by means of a friendly rivalry to stimulate both the dairy farmers and their milkers to greater interest in the production of clean milk; (4) to demonstrate how reasonably clean milk can be produced under ordinary farm conditions, and without excessive increase of cost. The competition included the examination of samples of milk (chemical analysis and the investigation of the bacterial content and keeping quality), and inspections of the farms with especial reference to the health of the cows, the general equipment, and the methods of milking, cleansing, and so on. Each of the fifty-three competitors sent in samples of milk at fortnightly intervals, and, although licensed purveyors of certified or of Grade A milk were not allowed to compete, yet out of the 305 samples that were examined no fewer than 212 came up to the Grade A bacteriological standard, and 109 samples were actually within the standards of certified milk. These results certainly demonstrate the high quality of the milk

from the competing dairy farms. In addition to giving in tabular form the detailed results of the various examinations, the pamphlet contains some reports giving information of more general interest. The preface by the county medical officer of health emphasizes the value of such competitions in securing greater cleanliness of milk and milk production, and in reassuring the public in this respect. The report of the surprise inspections of the various farms by the inspecting judge includes several details of practical value with reference to the cleanliness and construction of cowsheds, milkrooms, and utensils; notes on the methods of milkers, protection of milk from contamination, cooling procedures, and the important matter of cleansing the cows before the milking operation. Where second visits were possible it was noticed that considerable improvements had followed criticisms made on the occasion of the first inspection, and it was manifest that the competition was inducing a keener interest and an increasing carefulness in more than one direction. The report of the bacteriological examinations (six samples of milk from each competitor, in addition to "surprise samples") contains further evidence that the sterilization of utensils was being more effectively performed in consequence of the educative influence of the competition. The winner of the competition contributes a report, "How I produce clean milk," and an article by the assistant county medical officer of health on the care of milk in the home contains many practical hints which should be widely disseminated, especially during the summer months. The whole pamphlet is particularly interesting, and it deserves consideration by the general public outside the county of Kent. It is to be hoped that such competitions will multiply throughout the country; their practical value is evident, and they are very highly approved by the Ministry of Agriculture. The address of the society is 22, High Street, Maidstone.

RESPIRATORY METABOLISM.

VARIOUS papers have been written on the problem of estimating the energetic requirements of muscular work. Cathcart and Orr (1919) used the Haldane-Douglas method, for which the respiratory quotient has to be calculated for each experiment. Waller attempted to simplify this by determining the respiratory metabolism from a knowledge of the carbon dioxide only. His results were founded on a large number of professional men, dock labourers, and persons occupied in other industries. His method has, however, been adversely criticized by several physiologists. Greenwood and Newbold[1] have recently discussed the whole subject from the statistical point of view, and have shown arithmetically some of the difficulties involved. The data they used were those of Benedict and Cathcart (1913), based on 483 observations on a trained subject, lying, sitting at rest, and working. From the analysis of the data as a whole they found that the mean of the respiratory quotient almost agreed with that adopted by Waller, but that the variability of oxygen use was too large for it to be possible, from knowledge of the output of CO_2, to predict at all accurately the oxygen use. Even when the subject was at rest (lying on a couch) the variation was large, of the order of 8 per cent. of the mean. Similarly, when work experiments were considered, it was found that if four variables—CO_2, work per minute, speed of work performance, and total previous work—were all known, the oxygen use had a variability of nearly 7 per cent. The paper deals also with the estimation of external work when the respiratory metabolism is known, or with the converse problem of estimating the metabolism from a knowledge of the work performed. In estimating work from the CO_2 the coefficient of variation of work was 14 per cent. of its mean, and a knowledge of oxygen use too did not sensibly reduce the variability. Given also knowledge of the speed with which work was performed, the variability was only reduced to 11 per cent. An attempt to improve the prediction of work was made by reducing the range of work—the range in the whole series of experiments being large; but the variability in this was of the same order as in the previous analysis. No better results were obtained in estimating the respiratory metabolism from a knowledge of the external work. The variability of both oxygen use and CO_2 output was of the order of 12 per cent. These results are all based on carefully made experiments on a single individual. It follows that in any practical application of this method, where many individuals are involved, the variation would be still larger and consequently the predictions still less exact. The authors conclude that "when any experimental calibration of different forms of muscular work is based upon the confrontation of small samples of measurements upon different subjects, only the roughest results are attainable."

[1] Greenwood and Newbold: On the estimation of metabolism from determinations of carbon dioxide productions and the estimation of external work from the respiratory metabolism, *Journal of Hygiene*, August, 1923, vol. xxi, No. 4.

THE *London Gazette* of October 26th announces that the King has appointed Sir Humphry Davy Rolleston, K.C.B., to be Physician in Ordinary to His Majesty in the room of Sir James Reid, Bt., G.C.V.O., K.C.B., deceased, and Dr. Edward Farquhar Buzzard to be Physician Extraordinary to His Majesty.

MR. WALTER G. SPENCER'S Bradshaw Lecture before the Royal College of Surgeons of England will be given at the College on Thursday next at 5 p.m. Members of the profession and students interested are invited to attend. The subject of the lecture is melanosis, and Mr. Spencer will deal with melanin, melanoma, and melanotic cancer.

THE Columbia University Press, New York, has just published as a pamphlet the Chandler Lecture delivered before the Columbia University of New York in 1921. Like everything Professor Gowland Hopkins does it is concise, well thought out, and clearly expressed. We have so recently published his Cameron Prize Lectures that we may be excused from giving any detailed review of his Chandler Lecture. After its delivery Professor Hopkins was presented with the Chandler Medal, which is awarded yearly to a distinguished chemist. The pamphlet, which is to be obtained in this country from Mr. Humphrey Milford (1s. 6d. net), is illustrated by a characteristic portrait of Professor Hopkins.

IN referring last week to the portrait of Sir Charles Scarburgh presented to the Royal College of Physicians of London by Dr. Innes Smith of Sheffield, we inadvertently spoke of the Temple Newsome picture as a replica of that at Barbers' Hall. The two are quite distinct, as can easily be seen from the reproduction in Peel Ritchie's *The Early Days of the Royal Colledge of Phisitians, Edinburgh*, to which Dr. Innes Smith has called our attention. The Temple Newsome portrait is of a middle-aged man, and was painted probably when Scarburgh was about 50. The Barber Company's picture shows Scarburgh at the age of about 36 lecturing on a body which Edward Arris is dissecting. Young's *Annals* of the Barber-Surgeons gives the following minute: "Paid to Greenburye for Painting the Picture of Mr. Edward Arris and Doctor Charles Scarborough & Anathomye — £9-10-0." The Temple Newsome portrait is probably by a Dutch artist.

British Medical Association.

THE COUNCIL DINNER.

THE second annual Council dinner of the British Medical Association was held in Edward VII's Rooms, Hotel Victoria, on October 24th. Dr. R. A. BOLAM, Chairman of Council, presided over a company of 200, and had on his right the chief guest of the evening, Sir Dawson Williams, Editor of the *British Medical Journal*, whose twenty-five years of editorship the dinner was designed to commemorate; and on his left Sir W. Joynson-Hicks, M.P., Minister of Health. The others at the principal table were:

The Right Hon. Lord Justice Atkin, Sir John Atkins, Dr. T. W. Naylor Barlow (President, Society of Medical Officers of Health), Sir John Bland-Sutton (President of the Royal College of Surgeons), Dr. H. B. Brackenbury, Surgeon Rear-Admiral J. Chambers (Director-General, Medical Department of the Royal Navy), Mr. C. P. Childe (President of the Association), Sir John Collie, M.P., the Right Hon. Sir Henry Craik, M.P., the Right Hon. Lord Dawson of Penn, Sir W. Hale-White (President, Royal Society of Medicine), Sir Laurence Halsey, Dr. R. Wallace Henry, Dr. A. Bostock Hill (President, Association of County Medical Officers of Health), Lieut.-General Sir W. B. Leishman (Director-General, Army Medical Service), Sir Edwin Lutyens, R.A. (architect of the Association's new building in Tavistock Square), Dr. J. A. Macdonald, Major-General Sir William Macpherson, Sir Philip Magnus, Sir George H. Makins, Dr. L. G. S. Molloy, M.P., Air Commodore D. Munro (Director R.A.F. Medical Service), Sir George Newman (Chief Medical Officer, Ministry of Health), Sir Alfred Rice-Oxley, Sir Arthur Robinson (First Secretary, Ministry of Health), Sir Leonard Rogers, Sir Humphry Rolleston (President, Royal College of Physicians), Sir S. Russell-Wells, M.P., Major-General J. B. Smith (Medical Adviser to the India Office), Sir Squire Sprigge, Sir Charters Symonds, Mr. E. B. Turner, Sir Jenner Verrall, and Dr. T. Watts, M.P.

THE COMMON HEALTH.

Mr. C. P. CHILDE proposed "The Common Health." He spoke of the great advances made in recent years in preventive medicine, and in particular the enormous reduction in infant mortality. Thanks largely to sanitary science, which might be said to have begun in 1840 with the appointment of the Poor Law Commission to inquire into the high incidence of disease and the high mortality among the poorer classes of the community, the toll exacted by some common diseases had been greatly lessened, and some, like typhus, had become extinct. He quoted some cogent words from Lord Palmerston, who, as Home Secretary, was petitioned in 1853 to appoint a national religious fast with a view to averting an anticipated outbreak of cholera:

"It did not appear to Lord Palmerston" (the then Home Secretary wrote) "that a national fast would be suitable to the circumstances of the present moment. The Maker of the universe established certain laws of Nature for the planet on which we live, and the weal or woe of mankind depends upon the observance or neglect of those laws. Lord Palmerston would therefore suggest that the best course which the people of this country can pursue to deserve that the future progress of the cholera should be stayed would be to employ their time planning and executing measures by which those portions of their towns and cities inhabited by the poorer classes may be freed from those causes of contagion which if allowed to remain will be fruitful in death and disease in spite of all the prayers and fasting of a united but inactive nation."

The real function of health authorities was to remove those conditions which made ill health inevitable, and the first of these was the slum areas which disgraced the great industrial cities. A healthy home was the very basis and foundation of the common health. To build up a country of healthy homes was a gigantic financial and sociological proposition, but it could be done by a bold and imaginative statesmanship. (Applause.) On the publications of the New York State Health Department there occurred this heading: "Public health is purchaseable. Within its natural limitations every community can determine its own death rate." This had been abundantly proved during the past generation as a result of sanitary legislation.

Sir WILLIAM JOYNSON-HICKS, in responding, said that the Minister of Health was at all times assured of a welcome from the British Medical Association. They and he were concerned with the question of public health—they with a profound knowledge of the subject, he with but little. At the same time, in this curiously constituted world, it was the man who knew little about the subject (although advised by those who knew much) who had the last word. He went on to speak of the value of public health to the nation. In twelve months, among the insured population alone, 19½ million weeks of work had been lost by reason of sickness; 50 per cent. might be added for the workers not insured, bringing up the total to 30 million lost weeks of work, representing, at an average of £2 a week, £60,000,000. If that could be brought down by one-half it would mean a great addition, not only to the happiness, but to the financial well-being of the country. Then there was the wastage from premature deaths. Every man, by the time he had reached 21, had cost the community something like £400 in food, housing, clothing, and education, and the mortality from preventable disease meant that numbers of the population were cut off before they could make any return for this expenditure. The State and the practitioner must work together. ("Hear, hear.") There must be mutual understanding and co-operation. The Ministry of Health was the machinery which endeavoured to co-ordinate the work of the public health departments and of the private medical practitioner. "We are imperfect, but if we were not imperfect there would be no room for that expert and independent criticism to which the proposer referred and to which, I am bound to say, I am not a stranger. Any man in public life who objects to honest criticism is either a fool or a knave." He reminded the company that, great as had been the advances in preventive medicine, there still remained unconquered scourges. In dealing with these the Minister of Health was helpless without the medical profession and its gallant band of investigators. A great deal of his own work was purely administrative, but his dream as he sat in his chair at the Ministry was of wider discoveries and an enlarging compass of knowledge, bringing hitherto baffling diseases into subjection. He had been but a few weeks in his present position; he came to it with great ideals, but those ideals had grown every day, and he believed that great as had been the accomplishments in public health during the last fifty years the future would eclipse them all. (Applause.)

Sir WILLIAM HALE-WHITE referred to the remarkable altruism of the medical profession, whose quest for the common health was in defiance of its own interests. The secret of business was to create a demand; the medical profession existed, not to create a demand, but to spoil it. It was constantly stamping out the very diseases by which it lived. This had always been characteristic of the profession. In the early days the functions of priest and doctor were combined in one individual. The priests of Egypt made cats sacred because the cats killed the rats that caused the plague, although the plague unchecked would have brought large sums of money to those practising medicine. In Leviticus xiii and xiv there was described a disease called indifferently leprosy and plague, evidently a highly infectious disease, and all the instructions were directed to stamping out the very source of the doctor's income. The man affected had to be separated from his fellows, his clothing burned, his house (if it had harboured several cases) pulled down and its stones scattered. Coming down to the days of Edward Jenner, the speaker told the story of how, when all other pleas to Napoleon had failed to secure the release of two students in Geneva, Jenner added his request, and Napoleon's reply was, "We can refuse nothing to that great man." Coming to our own day he instanced the putting down of malaria and typhoid—in both cases thanks to the researches of Englishmen—although the profession was thereby doing the most unbusinesslike thing in its own interests that could be conceived.

"OUR EDITOR."

The CHAIRMAN said that the occasion of the dinner was one of which they in the British Medical Association were proud. The chief guest that evening was the Editor of the *Journal*, and before calling upon Sir John Bland-Sutton to propose his health he would read two telegrams, one from Sir John MacAlister, whose doctor forbade his attendance, and the other from Dr. Guy Stephen, who was associated with the *Journal* for many years, and who has

wired from France, "Floreat Dawsonius Guillelmi." The following note had also been received:

"As a veteran of the staff and a former Assistant Editor and colleague of my old friend, Sir Dawson Williams, from over forty years since, I beg to tender him my hearty good wishes on this auspicious occasion, deeply regretting that age and growing infirmities have completely prevented me from being present. ALBAN DORAN."

Sir JOHN BLAND-SUTTON said that he considered it a privilege to be allowed to propose the toast of his old friend the chief guest. Surely more than forty years of friendship was a sufficient title for him to do so. He made Dawson Williams's acquaintance many years ago, but, of course, as one got older, although one remembered things, they all seemed flat, like the image in a kaleidoscope, and it was a little difficult to put them in the proper perspective. Everything that he remembered about the chief guest, however, stood out in the boldest relief. He knew him first when he (the speaker) was working at the Zoological Gardens, making *post-mortem* researches on animals. Dawson Williams impressed upon him the need for having his cases carefully reported, as the work was new; and later, in his quiet and unobtrusive way, initiated him into the art of dropping the *ego* and using the editorial "we." But slowly Dawson Williams slipped away to gain the hill-tops of journalism, while the speaker had to grovel for a living in the valleys and defiles of the abdomen. (Laughter.) He could not imagine a better Editor for such a journal as the *British Medical Journal*. Look at his record. He was a distinguished graduate of London University; he soon became physician to a hospital; he used to work very hard at the different scientific societies and became familiar and friendly with all the rising physicians and surgeons of his own time, and these had remained his friends. In addition, he was thoroughly familiar not only with hospital but with private practice. The *Journal* stood to-day under his management in this important position that it fulfilled its function as the official organ of the Association, and its Editor had been clever enough, while looking after the interests of the rank and file of the profession, to keep the scientific side of the art properly illuminated. He had done that by virtue of the fact that he knew all the rising young men of his day, and he had the knack of getting the right man to do the right thing. The British Medical Association throughout the Empire must be very proud of that fine *Journal*, and full of gratitude to its Editor for the wonderful way in which he had kept it in such a splendid condition both from the scientific and the general and domestic point of view. (Applause.) Editors, like surgeons, varied in ability, in temper, and in judgement, and as he had never before had the task of proposing the health of an editor he would like to refer to his qualifications and his trials. An editor must be a man with a wide knowledge of English literature, a sense of humour, and, above all things, a skill in psychology. In short, he must be full of wit and wisdom—and also of guile! He must be patient and tolerant too. Then he had to think of his Chairman of Council, of the Council itself, and of his contributors and his subscribers. He must have a keen sense of proportion and space: prolixity in an author could only be described as a damnable thing. (Laughter.) There was nothing so troublesome to the editor as the prolix author who resented the blue pencil and used his pen and ink on the revises with the same irreverence as the board-school teacher used chalk on the blackboard. "D. W." had once said to him that his editorial troubles had turned his hair prematurely grey; but that only made him look more learned! He sat very well after twenty-five years of editorial troubles, wearing a knighthood which he well deserved, and, what was more valuable, receiving the good wishes of all those with whom he worked and hosts of friends besides. (Applause.) He asked the company to drink the health of "Our Editor" and to wish him many years of happiness.

The toast was pledged with great heartiness and given musical honours.

Sir DAWSON WILLIAMS said that he found the greatest difficulty in acknowledging at all adequately the kindness he had received or in expressing his very sincere feelings on that occasion. In particular he thanked Sir John Bland-Sutton—who they all hoped would long illustrate the secret of perpetual youth—for the delightful way in which he had proposed his health. There was a very common and, as he thought, an excellent maxim that nothing should be said about the dead unless it was something good. That evening he seemed to have had the privilege—unusual, but not unprecedented—of listening to his own obituary notice. As he had reminded them, the speaker first became acquainted with Sir John Bland-Sutton at the Pathological Society, to which he brought pieces from the bodies of animals in the Zoological Gardens, where he was prosector. The Society was greatly interested, but, rather to his own relief (he was reporting the proceedings), the specimens did not lead to much discussion, the reason being that nobody except Bland-Sutton knew anything about them. (Laughter.) They were in fact assisting at the foundation of a new science or a very distinct department of science—the science of comparative pathology—which in recent days was making very great progress. There was some hope at that time that Bland-Sutton would devote himself entirely to science, but he elected to be a surgeon, preferring to deal with the living rather than the dead. Why he did not become a physician he did not know. The distinction between a physician and a surgeon was given to him the other day by a lady who said, "The physician gives you something to take into you; the surgeon takes something out of you." (Laughter.)

His own connexion with the *British Medical Journal* went back for a considerable number of years beyond the date on which he was appointed Editor. He was associated in the first place with the then Editor, Mr. Ernest Hart, a very distinguished official of the Association, and the quickest witted man he ever knew, who was aware of what the other person was going to say some seconds before that person knew it himself! Hart had been trained as a medical journalist at the *Lancet*, where he was in the succession from Thomas Wakley, a person of extraordinary energy and ability, who began life by sowing wild oats with both hands, his journal following his example, but who eventually settled down and obtained that certificate of respectability which election to Parliament conferred, while the journal which he founded and directed for many years also settled down and became a most respectable and influential organ of public opinion whose centenary they had had the happiness of celebrating within the last month. In his last illness, Ernest Hart, thinking, no doubt, that the speaker was likely to be appointed to succeed him, said, "I am leaving you a nice quiet time!" Well, the first thing that happened was the reconstitution of the Association, which excited acrimonious words and bitter feeling to a degree which it was now difficult to understand. The Association, now approaching its centenary, had begun in a small way, and for a time had not bothered much about its constitution. In 1837, within five years of its establishment, it made its first attempts to set up representative government, but it went on growing until it was thought necessary to get a new constitution, which it did about forty years ago. The aim of the reformers was to establish a system of representative government, but owing to the operations of the Companies Acts or their interpretation by the bench it found itself saddled with a constitution so democratic that there had been nothing like it since the constitution of the Greek states in the great days of Greece. The great days of Greece lasted for about a hundred years, but the Association discovered its mistake in about twenty, and now the Association had a constitution which was a model; it had a Representative Body, like the House of Commons, and it had, what the British constitution as yet had not, an elected Upper House. The second thing which, to use a classic phrase, upset his apple-cart, was the Insurance Act, as a consequence of which the *Journal* was swollen to proportions such as, happily, it had not been necessary to reach since. They were now again in an insurance crisis, but he did not intend to discuss any controversial matter that evening. He would only remind them that, as Sir William Hale-White had said, the profession of medicine was very old: it was well for the public to realize that it began to manage its own affairs some five hundred years before the Christian era, and that it had set up a discipline (in both senses of

the word) which had worked very well ever since, and had a code of ethics and a control over its members such as, he thought, Lord Justice Atkin would allow him to compare with the very efficient discipline maintained by the Bar. (Applause.) The conception of the *Journal* which was held by the Council, and which he believed to be a true conception, was that it should be at once a newspaper and a scientific organ. It was not always easy to meet those two conditions. The progress of science was so remarkable that, as a reviewer said of a voluminous author, they "panted after" the writers of scientific papers in vain. He would read an extract from the very illuminating and inspiring Harveian Oration which Professor Starling delivered the other day:

> "I feel that I have had the good fortune to see the sun rise on a darkened world, and that the life of my contemporaries has coincided not with a renaissance but with a new birth of man's powers over his environment and his destinies unparalleled in the whole history of mankind."

That exactly expressed what had been his own fortune in regard to that side of the *Journal's* activities. That had been really the most important part of his life-work, as it would be the most important part of the work of his colleague, Dr. Horner. (Applause.)

In conclusion, he would like to congratulate the Council on this series of dinners. In the past perhaps they had been too businesslike, and had forgotten the advantages of social amenities. He was glad to think that this time next year there was a prospect of the Council holding its dinner in the Association's own dining-room in its own house in Bloomsbury, which was already the home of many institutions of learning, and bade fair to become the university quarter of London. The building was a beautiful example of domestic architecture, the work of a great imaginative artist, Sir Edwin Lutyens, who had honoured the Association with his presence that evening. They were greatly indebted to the Chairman, Dr. Bolam, for the trouble he had taken in the matter of the building. (Applause.) If there was any difficulty in naming the house he suggested it might be called "Bolam's Buildings, Bloomsbury"! (Laughter.) No dinner table was complete without some silver plate upon it. If then the Council was to dine, and entertain guests at its own table, it seemed imperative that it should have some silver, and he had ventured to bring with him that evening a very small beginning. The late Mr. Francis Fowke, who during his thirty years as Financial Secretary had worked a most satisfactory change in the finances of the Association, had sometimes to record, single-handed, the minutes of Council meetings; he was in the habit then, and only then, of taking an occasional pinch of snuff to keep his attention alert when he found it flagging. The speaker did not wish to suggest that any such artificial stimulus was needed nowadays either by the Chairmen and members or by the Secretaries, nevertheless he hoped the Council would accept from him, as a beginning of their collection of silver plate, a snuff-box, which he handed to the Chairman amid applause.

The Chairman accepted with many thanks this very beautiful gift as the first item in the Association's collection of silver plate. He added that he had already offered a pinch to the Minister of Health. (Laughter.)

"Our Guests."

The Chairman proposed the health of the guests. Advantage was usually taken of a dinner such as this to do honour to retiring officers, but no officer of the Association who was retiring was able to be present that evening; Sir William Macewen, the Past President, was at that moment nearing the shores of Australia, if he had not already landed. The Council was very proud that so many distinguished members of the profession, not specially identified with the political activities of the Association, should have assembled that evening to do honour to their chief guest. In Sir Dawson Williams they had, not, as the Editor sometimes asked them to believe, an archaic survival, but a physician who had not lost touch with the latest development in his science, a man who exercised an influence wider than many of them dreamed, and one whose unrivalled literary ability was an inspiration to his staff. (Applause.) It must not be assumed that his sole preoccupation was his beloved *Journal*. Those in the offices of the Association had always found that he was what the old preacher termed that "medicine of life," a faithful friend. (Applause.) Dr. Bolam then went on to welcome in graceful phrases the titular heads of the medical services of the Navy, Army, and Air Force, and the Presidents of the two Royal Colleges. He coupled with the toast the names of Sir Humphry Rolleston, who was one of the greatest friends the Association ever had, and Lord Justice Atkin, who had given repeated evidence of his kindly feelings towards the medical profession.

Lord Justice Atkin caused much laughter by his description of an obscure disease the title of which he thought at present was not thoroughly well known. It began with a sense of shock, following upon the intelligence that the patient was expected to make a speech, followed by depression, failure of appetite, excitement at the crisis, occasional incoherence, sometimes aphasia in an extreme form; at other times the symptoms succeeding the crisis were different, the patient becoming talkative, sometimes exhibiting delusions, with signs of megalomania, and a marked inability to resume a sitting posture. The symptoms sometimes yielded to mild alcoholic treatment, and in course of time abated. His own claim to speak on that occasion was that he belonged to a small society (the Medico-Legal Society), composed of the members of both professions, in which each derived benefit from association with the other. The society dealt with a great many topics, and occasional echoes of its proceedings were to be found in the *British Medical Journal*. The medical profession quite properly prided itself upon its success in preventive directions, and the ideal of the lawyer was not very far removed; it was not to foment strife, but to abate it. Very few laymen were aware of the extent to which the ordinary legal practitioner acted as a peacemaker. In the legal profession also something was done towards relieving the legal necessities of the poor, but the contribution was small indeed in comparison with that which was made by the medical profession in a similar respect. There was no profession which showered such gifts upon the public.

Sir Humphry Rolleston said that he responded, not only as a private person, but as President of the Royal College of Physicians, and in that dual capacity he cordially expressed the best wishes for the progressive and assured prosperity of the wonderful organization of the British Medical Association, which now numbered 26,000 members, or more than half the registered medical practitioners of the Empire. Though well established in years, the Association was ever finding new avenues of activity, and with the enthusiasm of healthy vigour was anxious to go on and conquer new worlds. Indeed, the complexity of the Association's activities was somewhat bewildering; with new legislative measures the political responsibilities imposed on it had multiplied. Founded at Worcester in 1832 by Sir Charles Hastings with the object of promoting medical science and maintaining the honour and interests of the medical profession, it continued admirably to uphold its tradition of representing the whole country, as was shown by a glance at the list of its leading officers; though its headquarters were in London it was in no way metropolitan, and it took the broadest views. Devoted to the welfare of the profession and to the object of uniting its independent units into a combined force—no easy task—it exercised political and ethical and professional functions. After years of patient work it was instrumental in passing the Medical Act of 1858, and since then the increasingly numerous legislative procedures touching medical men and matters had been thoroughly scrutinized, criticized, and influenced by the special Committees of the Association. Its educational scope, including the Annual Meeting, was equally large, but he would refer only to the Library, the Science Committee, and the *Journal*. The Library was a most important part of such an organization, and with the recent appointment of Mr. W. G. Spencer as honorary librarian it was certain that the Library in the new building would be a leading feature, run on the most modern and efficient lines, and thoroughly worthy of this great organization. The Science Committee distributed funds for re-

search, stimulated professional enthusiasm by lectures and prizes, and might with advantage investigate patent medicines and influence some control over them. The *Journal* had passed under the names of the *Provincial Medical and Surgical Journal* (1840), the *Association Medical Journal* (1853), and the *British Medical Journal* (1857). He must not repeat what Sir John Bland-Sutton had said, but it was impossible to suppress the admiration he felt for the present Editor, and for the great work he had done, was doing, and, he hoped, would long continue to do in making and maintaining the high standard of medical journalism in this country. (Applause.)

"The Chairman."

Dr. Wallace Henry proposed the health of the Chairman and praised the wisdom and tact with which for over three years he had conducted the business of the Council. He had sacrificed time and money and health in the interests of the Association, but they all rejoiced to see his health very much restored. (Applause.) He referred especially to his work in bringing about a linkage between the Association and the Society of Medical Officers of Health, and in securing the new building in Bloomsbury which was to be the home of the Association. They all hoped that during his period of office they would see the buildings completed.

The toast was drunk with much heartiness, and Dr. Bolam, in reply, thanked them for the kind thing they had done, even though it was wholly out of order. It had been a great pleasure to him to take part in the work of the Association.

FELLOWSHIP ADDRESS OF THE AMERICAN COLLEGE OF SURGEONS.

At the convocation ceremony of the American College of Surgeons in Chicago, on October 26th, the Honorary Fellowship of the College was conferred upon Sir William de Courcy Wheeler, President of the Royal College of Surgeons in Ireland, and upon Mr. A. E. Webb-Johnson, C.B.E., D.S.O., F.R.C.S., Honorary Surgeon to the Middlesex Hospital and Dean of its medical school. Mr. Webb-Johnson is visiting the United States in response to an invitation to deliver an address at the meeting of the College. The Fellowship address was delivered by Sir William Wheeler.

Sir William Wheeler's Address.

Sir William Wheeler began his address by expressing his thanks and sincere appreciation of the honour that had been done him in electing him an honorary Fellow of the American College of Surgeons, and of the high compliment that had been paid him by the Regents of the College in inviting him to address them on the tenth anniversary of its foundation. He wished to acknowledge, he said, with no feigned gratitude, the spirit of brotherhood which surrounded him on all sides.

The distinguished past-president of the College, Dr. John B. Deaver, who had recently vacated its chair, had justly pointed out that the American College of Surgeons, though national in name, was international in scope, and was carrying on the principles of the profession for the good of humanity. The American College had demonstrated to the world that medicine and surgery, and, indeed, scholarship generally, were independent of nationality and knew no distinction of race or speech. To Irishmen especially, throughout their entire history, America had exercised an attraction as if by some magnetic influence, and its surgical work and literature were as well known in Ireland as they were in America itself. It was the proud privilege of the Irish College of Surgeons, over which he had the honour to preside, to number among its honorary Fellows no fewer than nine of the great American surgeons of the day. The Irish College had been chary in the bestowal of that honour during the one hundred and forty years of its existence, and the simultaneous bestowal of the honorary Fellowship on nine surgeons from the same country had no precedent in the previous history of the College. When, however, it was proposed to enrol the name of the President of the American College, Dr. Cushing, together with the names of Drs. William and Charles Mayo, Dr. Ochsner, Dr. Keen, Dr. Hart, Dr. Finney, Dr. Brewer, and Dr. Crile, not a single dissentient voice was heard, and it was felt that an occasion had arisen when time-honoured precedents ought, for the moment, to be disregarded. It was but natural that they in the surgical profession in Ireland should feel an admiration for the surgeons of America. Many of the greatest of them bore Irish names, and blood was thicker than water. He expressed the hope that the members of the medical profession of the two lands might be joined in brotherhood for ever in the service of mankind.

Naturally, his thoughts at the moment turned much on travel and its influence on the progress of surgery, and in that connexion he was reminded of the words of a great Canadian, Osler: "Let me suggest that the lines of intellectual progress are veering strongly to the West, and I predict that in the twentieth century the young English physicians will find their keenest inspiration in the land of the setting sun." Osler had, as they in Ireland had—to quote the words of his father-in-law, Lord Shaw—"A love for the land where dreams come true; dreams of more secure reward for honest industry; of freedom from the irksome restraints and conventions which have outlived their day; of equality, frankly avowed and sincerely prized." Osler deplored contentment with second-hand knowledge derived from books; he urged scientists to add their own contributions to the general store of knowledge and to gain familiarity with workers abroad. Those who lived in a small island found it difficult to realize and to attach sufficient importance to these matters. It was very difficult, even for an Irishman, to live on an island and not to have an insular outlook; but difficulty was a severe instructor, and they were learning from their difficulties as well as from their mistakes. "Just as soon as you have your second teeth," said the great medical philosopher, "think of a change; get away from the nurse; cut the apron strings of your old teachers; seek new ties in a fresh environment." Osler, Canadian born, with a great wide outlook, deplored intellectual infantilism and that disease known as progeria, in which "as if by the touch of the wand of some malign fairy, the victim skips adolescence, maturity, and manhood, and passes to senility, wrinkled and stunted, a little old man amongst his toys." With the limited vision which was given to those who lived and worked in a small country two other defects were wont to develop as the result of want of travel—namely, swelled head and writers' cramp.

Much of the early history of medicine in Ireland was traditional and legendary, but the people of bygone days were not devoid of literary culture. It was known, on the testimony of Tacitus and Homer, that women studied medicine in ancient times, and the same appeared to be true of Ireland as of Rome and Greece, for in the *Book of Genealogies* of MacFirbis reference was made to a female physician of the name of Eaba. It was further interesting to note that the Royal College of Surgeons in Ireland was the first modern licensing corporation in Great Britain and Ireland to admit women and to appoint them to the highest offices in its gift. There was no lack of references to Irish medicine in past ages. The *Book of Leinster* recorded the tragic fate of Conchobhar MacNessa, King of Ulster, who died in A.D. 37, and related that he was wounded in the head by a missile from the sling of an enemy, and attended by a physician of the name of Fingen. The wound was closed, the sutures used being of gold, as corresponding in colour with the King's hair. Concerning the clinical instinct of Fingen, it was stated that "He could know by the fume which rose from a house the number that were ill in the house and every disease that prevailed in the house." The ancient laws of Ireland, the Brehon laws, which were codified at the request of St. Patrick in A.D. 438, referred to the remuneration and responsibility of medical men. If a person wounded another, the aggressor was obliged not only to pay a fine to the injured man, but also to provide him with maintenance and skilled medical care—a regulation the lapse of which could not but be regretted. The profession of physic passed from father to son in those days, an Irish custom that persisted until comparatively recent times. The ancient Irish doctor was shrewd enough to travel, and representative Irishmen, not only of the medical but of other professions also, remained abroad, and were to be found occupying distinguished positions in the various schools of Europe. Ancient manuscripts proved how admirably Irish physicians kept in touch with the advance of learning in Continental centres. A thirst for knowledge, and a keen observation of the sick under their care, raised medical and surgical science to a high pitch of perfection in the Ireland of bygone days.

Towards the end of the sixteenth century progress came to a standstill. Ireland was torn by strife, and no shelter for learning remained. This decline was intensified by the failure of the Irish to grasp the significance of the revolution in learning that followed the introduction of the printing press. The art of printing was neglected until nearly one hundred years after its adoption by the progressives of other lands. The early printed records of the great European physicians were not imported, and no Irish medical literature existed in print at that time. This period of depression, however, passed,

and on turning over the later pages of Ireland's history there were found, after the lapse of a hundred years, evidences of a restoration to its former position, in the names of Colles, Graves, Stokes, Corrigan, Butcher, Tuffnell, and many others. In recent years Irish surgeons and physicians had been engaged in a heart-breaking struggle in their efforts to advance, for the ideals of medical men were different from those of politicians. They of the College of Ireland were trained to be optimists, and their optimism extended to a profound belief in their country, and that the ship of State would ultimately be steered into peaceful and happy channels.

Few institutions in Ireland could claim such a record as theirs, of having existed for over a hundred and forty years; and if it was asked how it was that their College had survived in a robust condition through the storms of the past and present he would answer, that it had always been content to attend strictly to its own business. Since the College ship was chartered by King George III on March 9th, 1784, their pilots had steered for surgical progress without deviation. Storms might have caused anxiety, but the ship's course had never been deflected by so much as a single degree; and of politicians, in the mischievous sense, they happily had none in the College of Surgeons in Ireland. America had taught them the power of self-reliance; they had felt the influence and had been stimulated by the example. He brought them fraternal greetings from the medical profession in Ireland, with the hope that the unexampled progress and prosperity of their country might continue in unabated vigour.

Nova et Vetera.

DOCTORS ON THEIR OWN ACCIDENTS AND ILLNESSES.

BY

THE LATE DR. J. W. BALLANTYNE OF EDINBURGH.

SOME references were made recently* to the sale of Sir Robert Sibbald's library, and to its remarkable contents—volumes, many of them, which would excite brisk competition in a modern auction room. This distinguished Edinburgh physician of the end of the seventeenth and the beginning of the eighteenth centuries showed a curious interest in all the details of the various accidents which happened to him, and of the illnesses from which he suffered. Several instances can be found in his autobiography (first published in 1833), along with engagingly frank disclosures of what occurred to the numerous conceptions of his wives, for he was twice married. Here is his narration of a golfing misadventure:

"Ane accident befell me on the 16th of October, 1690, that as I was coming from Sir Robert Milne his house in Leith, where I had been visiting his good brother Mr. Elphinston's wyfe, who had taken physic that day, about four afternoon, as I was going downe to passe the ditch to goe to the Links, wher I left some company playing at goufe, and my servant following me, neither he, nor I, nor the boy, adverting, I was strucken by a boy (said to be Captain Taylor his son) of fourteen or fyfteen years, with the back of the club, with much force, betwixt the eyes, at the root of the nose."

The wound is described with meticulous exactitude, for was it not Sir Robert's own wound, so that all the details were important and suitable to be recorded?

"The wound was oblong, large, and about half ane inch long. It was not half ane inch above the cartilage of the nose. The parts under the right eye was [*sic*] livid, and both the canthi majores were swelled. I bled much, and took a coach and came up, and was a good while before I could want [that is, do without] a plaster upon it. It was God his great goodness that neither the cartilage was cut, nor one of the eyes put out, for it was done with the sharp side of the club."

An instance from more recent times may be quoted in which another doctor also dwells with full descriptive embellishments upon an ulcerated sore throat. Dr. John Brown, the author of the never-to-be-forgotten sketch, *Rab and his Friends*, and of the delightful *Horae Subsecivae*, was the sufferer; the story was told in a letter to his brother William—the place again was Edinburgh, and the date 1838.

"Well, when down at the Terrace on Friday night (September 21st) writing to Andrew, I felt my throat turn suddenly sore and my breath get difficult, went home, couldn't sleep, got up, could not eat, went out, frequent pleasant creepings over me, went into a bath at the Infirmary, worse of this, all the blood inside, fought away till 3, went home to bed, and sent for Sandie Peddie; no sleep; Sunday going on worse and worse; no sleep. Monday throat desperate, getting afraid about myself, at twelve noon sent for Scott, who looked very glum, six leeches had been put on on Sunday, mustard, etc., no sleep. Tuesday, throat ecstatically painful, pulse very quick, all the time headache very bad, alternately in badness with the throat. On Tuesday afternoon, 11 leeches behind the ear, no better, bran poultices everlastingly, no good. Sent for Scott at 12 at night. He bled me to more than 16 ounces, with instant relief, how delicious! nothing in the world like it. He is a wise wight that Scotus. He went off; a quiet but sleepless night, throat still very sore. Scott and Peddie saw me about 7. I told them I was sure ulceration had begun; so it had with a vengeance, a hole I could lay my thumb in on one side, and a smaller on the other. Nitrate of silver liberally applied, Dr. Scott looking black enough, muriate of morphia, slept from 9 till 11, awoke worse and worse, ulceration, I fear, going on. Scott sent for again at dead of night, came, looking grimmer than ever, bled me till I fainted, about 16 ounces. I awoke and saw him brooding over the pulse with a face smiling with perfect delight. This did the business, and all has been easy enough."

There are many things in common in the two accounts. Both show an interest in every detail which leads to an absence of obedience to the ordinary laws of grammar and composition; in both the victim is frankly scared about himself. But there are differences too. Sir Robert records the accident solemnly, and puts the details in his autobiography, whilst John Brown tells his story in cheery phraseology to his brother in a letter. There is no relieving touch of humour in Sibbald's narration, but rather a cold resentment against circumstances; in Brown's there is a buoyancy of spirits which refuses to be cast down, and even sees a little fun in some of the events. It is the more excellent way of meeting an ailment. He indulges in a little speculation as to etiology: "It was a queer affair, not a common inflammatory sore throat, but as if a fever had been interrupted, aggravated, and destroyed by virulent sore throat, and then *it* bled to death." His explanation is hardly in the most recent phraseology, but contains a thought or two which are modern enough. His convalescence, too, was a joyous time as compared with Sibbald's slow and almost sullen return to normal. Brown had a literary feast: "I have read Southey's *Life of Bunyan*, the *Elixir of the Devil*, the fifth volume of *The Doctor*, etc., besides lots of Shakespeare's poems, and Carlyle's third volume of the *Revolution*. It is glorious; and now I am regaling myself with *Midshipman Easy*. . . ." He looks back on the fight with the malady with no resentment; "a rapid, fierce, but clean disease working its will for three or four days, 40 ounces of blood lost, no sleep for four nights running, desperate pain, total starvation, and then . . . health and a clear inside setting to work to make up."

It is easy to believe of this same doctor that at Chatham during the cholera epidemic he had been found asleep from fatigue by the bedside of a poor woman for whom he had ministered to the end. His is the right way to meet and to fight disease, whether in oneself or in another. Brown would have gone with Coué so far as cheery optimism went, but he would have accepted the "muriate of morphia" too, and whatever nowadays corresponds to the 16 ounces—a vaccine perhaps.

Sibbald's accident was in 1690 and Brown's illness in 183[illegible] but in quite recent times one finds what is perhaps the most detailed description of the course of a malady by the medical man suffering from it which is on record. In 1912 Dr. Leonard Portal Mark published *Acromegaly: A Personal Experience*, and in 158 pages told the story of how from the age of 24 till that of 50 (1879–1905) he experienced and in many cases since he was 14 carefully entered in his diary the symptoms of progressing acromegaly, without himself suspecting that he was a victim of that malady. To this case and to many others in which medical men gave more or less accurate accounts of their sufferings Sir Humphry Rolleston has referred in an interesting and entertaining paper entitled "Diseases described by medical men who suffered with them."[1] Mark's medical friends had diagnosed it thirteen years previously, and some of his near relatives had also been in the secret. Here is the account of his self-discovery:

"I was walking across the north-east corner of Cavendish Square one afternoon in November, 1905, when all at once the idea seized hold of my mind that perhaps I might be suffering from acromegaly, and that it might be the cause of my head trouble. It came upon me like a bolt from the blue. As far as I could remember afterwards, no particular train of thought led up to it. For the first time I thought there might be some connexion between my headaches and the enlargement of my hands and feet. When I got home I at once looked up the subject in Bowlby's *Pathology*, and what was a suspicion was at once confirmed."

The whole story is a remarkable illustration of the uncommon fact that a medical man may recognize

*See the JOURNAL for June 3rd, 1922, p. 888, and September 8th, 1923, p. 432.

[1] *The Military Surgeon*, June, 1921.

symptoms and even his change in appearance and yet completely fail to draw the obvious, or almost obvious, conclusion in a diagnosis of his malady. How far his blindness to the nature of his own ailment went was shown by Dr. Mark's reading without illumination a pamphlet on acromegaly which had been sent to him by a friend; yet his brother-in-law, finding the pamphlet on his table and reading it, recognized in a few minutes that it was a description of the malady from which Mark was suffering. He thought he had gout, he imagined hay fever, he even gave the name "my fever" to a curious feeling of malaise he had; he had his eyes examined and wore glasses for astigmatism, he had turbinectomy for nose trouble, he wore a denture for undue separation of his teeth, he had to discard hats and gloves and boots because they grew too small for him; and yet he was blind to his own signs, and he had not the gift to see himself as others saw him. In his own striking words: "For some fifteen or twenty years, each day when I looked into the glass to brush my hair or shave, there was a typical acromegalic literally staring me in the face; yet I never recognized the fact." The old proverb, "Physician, heal thyself," may in the future find another to keep it company—Physician, diagnose thyself.

England and Wales.

St. Thomas's Hospital Medical School.

The annual old students' dinner of St. Thomas's Hospital was held on October 26th at the Princes' Restaurant, with Mr. W. H. Battle, F.R.C.S., consulting surgeon to the hospital, in the chair. The large company present, numbering 215, included Sir Charles Sherrington, President of the Royal Society; Lieut.-General Sir William Leishman, Director-General Army Medical Department; Surgeon Vice-Admiral J. Chambers, Medical Director-General of the Navy; Air Commodore David Munro, Medical Administrator R.A.F.; Sir William Horwood, Commissioner of the Metropolitan Police; Sir Havelock Charles, and Sir Squire Sprigge, together with Sir George Makins, Sir Seymour Sharkey, Sir Hector Mackenzie, and many other members of the consulting and active staffs of the hospital. The toast list was as short as the speakers were concise, and the chairman, in proposing prosperity to St. Thomas's Hospital and Medical School, remarked that long speeches were out of place at a function which was meant to be a social gathering and not an occasion for instruction. He coupled with the toast the names of the Hon. Sir Arthur Stanley, Treasurer of the Hospital, and Sir Cuthbert Wallace, Dean of the Medical School. Sir Arthur Stanley began by assuring his audience that "the hospital is all right," though he hastened to add that it always had been short of money and always would be. Among recent developments, plans had now been got out for adequate club rooms in the college house to be built on the other side of Lambeth Palace Road; for this purpose £7,000 were already in hand. Sir Cuthbert Wallace first responded for the school and then offered a welcome to the guests. He covered a great deal of ground in a short space of time, and in so doing rather turned the edge of his own suggestion that speeches of this kind would be better if they were printed and circulated beforehand and "taken as read." Among the outstanding features of the year was, he said, the new medical curriculum; in this matter the colleges in London had gone further than any other body. In regard to the relations between the University of London and the medical schools of the metropolis, he wondered whether this increasing centralization was altogether an advantage. He recorded with gratitude the gift of £5,000 from the Dunn bequest to establish biochemical laboratories, and another £5,000 to endow them; for the allocation of these sums a special debt was due to the good offices of Sir Walter Fletcher. The number of students was still very large and the recent falling off in entries had been welcomed by those in authority at all the medical schools. Among the honours and distinctions of the year he mentioned, in particular, the knighthood conferred on Sir Hector Mackenzie, and the election of Mr. Basil Hall to the presidency of the British Medical Association for its Annual Meeting at Bradford in 1924. Lastly, in proposing the chairman's health, Sir Cuthbert Wallace said that no eulogy of Mr. Battle was needed in any gathering of St. Thomas's men, for he was known to everyone as a loyal, hard-working, and strenuous son of the hospital. The chairman in a brief acknowledgement asked the company to drink the health of the honorary secretaries of the dinner, Dr. L. B. Maxwell and Mr. R. H. O. B. Robinson.

Income and Expenditure of London Hospitals.

The King Edward's Hospital Fund for London has published its statistical report on the income and expenditure of 113 London hospitals for the year 1922. The hospitals are grouped as follows: 12 general hospitals with medical schools; 10 general hospitals without medical schools, and with an average of over 100 beds in daily occupation; 11 smaller general hospitals; 3 consumption hospitals; 5 hospitals for women; 8 hospitals for children; 5 ophthalmic hospitals; 3 hospitals for epilepsy and paralysis; 8 lying-in hospitals; 14 cottage hospitals; and 34 other hospitals. It is shown that the income of these 113 hospitals (apart from special distributions such as the emergency grants from the King's Fund and the National Relief Fund, and by the Voluntary Hospitals Commission) increased from £1,470,000 in 1913 to £2,401,000 in 1920, and £2,566,000 in 1921; in 1922 it was £2,398,000, a slight decrease. The special distributions which are omitted from these figures included, in 1922, £243,000 from voluntary sources—namely, from the first and second instalments of the proceeds of the Combined Appeal, and it was part of the scheme of this appeal that for an agreed period the co-operating hospitals should suspend all independent appeals. An analysis of the various sources of incomes shows that of the total amount £505,000 came as income from investments, £924,000 as voluntary gifts (subscriptions, donations, etc.), and £769,000 as earnings (from patients, public authorities, and other sources). To the total ordinary income is to be added the extraordinary income, comprising £172,000 from legacies, and £28,000 from other sources, including grants from the King's Fund in reduction of general fund debt. The difficulties of the hospitals, as compared with the conditions before the war, were produced by increase of expenditure and not by decrease of income. It is satisfactory, therefore, that expenditure now shows a substantial decrease. After having risen from £1,192,000 in 1913 to £2,784,000 in 1920, it fell to £2,776,000 in 1921, and to £2,572,000 in 1922. There was, therefore, a net aggregate deficit for the year 1922, among the 113 hospitals included in this report, of £174,000; a further analysis shows that 58 of the hospitals had surpluses for the year amounting to £67,000, and 55 had deficits amounting to £241,000.

A Sunlight Treatment Class in London.

We are informed by the Education Officer of the London County Council that at the suggestion of Sir Henry Gauvain, the London County Council's consulting specialist for tuberculous children, an experiment was conducted at Stowey House open-air school, Clapham Common, during the summer months, to ascertain how far sunlight treatment could be utilized in day open-air schools. Thirty-five boys were selected, with their parents' consent, by the school medical officer. The head master reports that during the first week the lads worked, at their class and manual lessons, in light shirts, short pants, socks and shoes. The second week shirts were discarded, and so on during succeeding weeks, until they wore nothing more than their breeches. Their bodies were browned without signs of redness, a factor essential to correct treatment. The head master reports that, as a result of a few weeks' treatment, the boys appeared more alert, more energetic, and particularly happy under the new conditions. On their return to school after the summer holidays, it was necessary to acclimatize them again, but this time for only one or two days were they compelled to wear shirts whilst at work. The school medical officer reports that the results of the treatment were sufficiently promising to make it highly desirable for the experiment to be continued next summer, and the Education Committee on October 24th decided to do so.

British Dentists' Hospital.

The eleventh annual meeting of the British Dentists' Hospital was held at the Camden Road headquarters on October 27th, with Sir Harry Baldwin, C.V.O., the new

president, in the chair. It was reported that the work of the hospital was now carried on at four treatment centres (Camden Road, Lewisham Park, Holborn, and Clapham Common) and at ten borough council clinics in London, and that during the year there had been 13,437 attendances, including 4,788 cases which were dealt with by extraction. The London County Council had arranged to deal with over 3,000 cases during the present year—a considerable increase over any previous year—at the Lewisham school treatment centre. Valuable work was being done at the council clinics at Battersea and Paddington. Sir Harry Baldwin praised the work of the hospital as one which performed a first-class service for people who were not well-to-do but who did not desire to be treated on an entirely charitable basis. He was glad that such an institution was having to enlarge its borders and was paying its way. The members of the dental staff were required not only to hold the L.D.S. diploma, but to be members of the British Dental Association. He went on to speak of the proper measures to be taken to prevent dental decay; these were really three in number: (1) the proper selection of food, including a sufficiency of such foods as furnished the vitamins or accessory factors; (2) oral hygiene, in which he believed gum friction twice a day to be much more important than repeated tooth brushing; and (3) a little dentistry at the right time.

Scotland.

A Convalescent Hospital.

The first portion of the new Astley-Ainslie Institution for the reception of convalescent patients from the Royal Infirmary of Edinburgh has been opened. This institution, for which there is now available a sum of over £600,000, is the outcome of the beneficence of the late Mr. David Ainslie of Costerton, Midlothian, who died in 1900 and directed that the residue of his large fortune should accumulate for fifteen years for this purpose. The general idea of the scheme is to provide an institution midway between a general hospital and a convalescent home. When fully equipped it will be able to receive between 150 and 200 patients. The type of patient for whom it is intended are those who, though not yet able to walk about, have a good chance of being restored to health; it is not designed for incurable diseases or cases of dangerous illness. It is to be equipped with modern facilities for scientific treatment and research, so that the patients may be followed up by the physicians and surgeons under whose care they have been originally in the Royal Infirmary. Sheriff G. L. Crole, the Chairman of the Governors, in performing the opening ceremony, stated that no other such institution existed in Britain, or even in America. The governors had acquired four contiguous properties—Canaan Park, Canaan House, Millbank, and Southbank, beautifully situated and beautifully wooded in the southern suburbs of Edinburgh. The Board of the Royal Infirmary was represented on the Board of the Institution, but its management and funds were entirely separate. The unit now open for patients is Canaan Park House, which has been remodelled by Mr. John Jerdan, F.R.I.B.A., so that it consists of a two-story building with open-air verandahs having a southern exposure and attractive outlook on the Blackford Hill. This and the other three units to be opened later are old mansion houses surrounded by grounds extending to some twenty-five acres, so that the convalescent patients will have ample scope for exercise and treatment by open air and sunshine.

The late Sir Isaac Bayley Balfour.

A movement has been set on foot to establish a memorial to the late Sir Isaac Bayley Balfour, who for thirty-four years was professor of botany in the University of Edinburgh and Regius keeper of the Botanic Gardens, Edinburgh. He had, with the Forestry Commission and the Office of Works, arranged for the establishment of a forestry station where plants and trees imported and raised in the Edinburgh Botanic Garden could be cultivated under more favourable conditions. An area of fifty acres on the commission's estate in Glenbranter Forest, Argyllshire, between the Firth of Clyde and Loch Fyne, will be used for this purpose; it will be under the superintendence of the Regius keeper, and will be called the Bayley Balfour arboretum or garden. The expense of maintaining it will be small, as land, house accommodation, plants, and trees are already provided, and it is proposed that the memorial should take the form of a rest house for visitors, who desire to spend some days at the place. Simple accommodation, a caretaker, and botanical books of reference will be provided if sufficient funds are forthcoming. A small executive committee has been formed, and Mr. John Sutherland, 25, Drumsheugh Gardens, Edinburgh, is acting as honorary secretary and treasurer.

Conference of the National Council of Women.

The annual meeting and conference of the National Council of Women of Great Britain and Ireland was held in Edinburgh under the presidency of Lady Frances Balfour. This Council, which was founded twenty-seven years ago, is interdenominational and non-political; it seeks to raise the level of citizenship and gives attention to the supervision of bills before Parliament affecting women and children, the promotion of health measures, educational reforms, and improvement of industrial conditions. About 600 representatives from all parts of the country attended the conference, which devoted a considerable amount of the time to questions affecting children. Mrs. George Cadbury, vice-president of the Council, proposed a resolution urging the Government and local education authorities to find funds for the further development of the School Medical Service. The Rev. Dr. J. Harry Miller, warden of New College Settlement, Edinburgh, gave an address on the delinquent child. Statistics showed that the age at which delinquency became most evident was between 14 and 17, and that Sunday was the day on which most offences were committed. Outlet for youthful energy in adolescence should be provided, and there was much need for halls, gymnasia, and other places of wholesome recreation.

Rectorial Election in Edinburgh.

The triennial election of a Lord Rector for Edinburgh University took place on October 27th. The candidates were Mr. Stanley Baldwin, Prime Minister (Unionist); Lord Buckmaster (Liberal); and Mr. Bertrand Russell (Labour). Mr. Baldwin was elected, in succession to Mr. Lloyd George, with 1,236 votes as against 488 votes for Lord Buckmaster and 261 for Mr. Bertrand Russell. The rival parties of Unionists and Liberals engaged during the progress of the voting in the time-honoured "battle" for the steps of the quadrangle, and in the evening joined in a torchlight procession through the streets of Edinburgh.

Ireland.

Royal Victoria Hospital, Belfast.

The opening address of the session was delivered by Professor A. Fullerton, C.B., C.M.G., in the King Edward VII Memorial Hall of the hospital on October 23rd. Mr. Mitchell, chairman of the staff, presided, and Dr. Lindsay, emeritus professor of medicine, and Mr. Sinclair, emeritus professor of surgery, with a large attendance of the staff of the hospital and students, were present. The chairman, in a few introductory remarks, called on Professor Fullerton, who welcomed the students to another year's work. He hoped they did not come with the object of riches nor of social advancement; the doctor was too often the butt of the novelist and of the playwright. Unwholesome and too flagrant competition amongst themselves in practice, and flat contradiction in the witness-box, lowered the respect of the community for them, and injured the prestige of the profession. Still there must be no barrier to all of good character in entering their ranks. Some were born into the profession, and breathed a doctor's atmosphere from their earliest years; some were guided by a trivial circumstance; but others, the idealists and enthusiasts, whom nothing could turn aside nor make waver in the pursuit of high scientific medicine, the discovery of knowledge, the prevention of disease, the relief of suffering—these entered medicine because simply they must; they had no choice;

and they reaped a rich reward in the greater influence and power, the gratitude of the community, and the raised position of the profession itself. The surgeon had been considered of late the most successful member of the profession; but he was now being pressed hard by the scientific physician, the metabolist and clinical pathologist, and the radiologist, and this was very deservedly so. Dreyer's researches were opening up new hope in tubercle and some septic affections. Insulin had rendered the treatment of diabetes mellitus exact and successful. Radiology had not been content in making visible the ureter, but had invaded the inner recesses of the brain, and by means of ventriculography had shown the closed foramen of Magendie or the blocked aqueduct of Sylvius. To replace the fluid of a hydrocephalus by air, then by the *x* rays to demonstrate the obstruction to the circulation of the secretion of the choroid, and finally to remove this obstruction by probe or otherwise, was surely an aim worthy of the keenest intellects and most delicate manipulation of the age. Radiology spread into pure therapeutics and gave promise of relief, perhaps of cure, in one of the most horrible of fatal diseases, cancer of the rectum. Their treatment of wound shock was another example of advance, and the results by the present method by the removal of all bruised and injured tissue gave results far beyond the hopes of pre-war days. All these advances were the results of the communism of science and the internationalization of medicine; and all should learn to study in this broad spirit, and recognize the provincial hospital as a constituent part of a world-wide institution. Mr. Fullerton urged the spirit of research, and pointed out that all could contribute; Edward Jenner in former years and James Mackenzie in recent times did their best work as general practitioners. Note-taking was much more than a preparation for an examination; it was an education in full and accurate observation and in the proper record of the results, and was indispensable both in practice and research. The hospital of the future would be known by its records, from beginning to end of the disease, reliable, serviceable; and such notes all students should be trained to take. The lecturer concluded by referring in happy vein to the long term during which Professor Sinclair was connected with the profession, and to his many years of skilled and arduous work for the hospital. He welcomed Mr. Malcolm to the staff as a worthy colleague and as a gain to its teaching power, and he congratulated Professor Thomson on his recovery from his tedious and trying illness.

Dr. Calwell proposed and Mr. Craig seconded a hearty vote of thanks to the lecturer for his valuable and eloquent address, and this was conveyed to him by the chairman and acknowledged.

Professor Sinclair of Belfast.

On the evening of October 23rd, Professor T. Sinclair, C.B., F.R.C.S., was entertained to dinner by his colleagues on the staff of the Royal Victoria Hospital, Belfast, on the occasion of his appointment to the consultant staff, and was presented with an oil painting, "Littlehampton Harbour," by B. W. Leader, R.A. The chairman, Mr. Mitchell, proposed in happy terms the guest's health, and said that, although they would all miss him from the more active and laborious work of the visiting staff, they hoped the separation was otherwise only verbal. Mr. Sinclair replied.

Typhoid Fever and Polluted Water.

A largely attended public meeting was held at Coleraine to consider the alleged action of the urban district council with regard to the serious outbreak of typhoid which has occurred and its supposed causation by impure water. It is stated that some sixteen cases of typhoid fever and a large number of cases of diarrhoea have occurred in the town since the beginning of September. At a meeting of the urban council one of its members said that one could not walk six yards without seeing that the water supply was being contaminated with manure. The following resolution was unanimously passed by the meeting:

> That the water supply for the town of Coleraine having been pronounced by Professor Wilson and Dr. Patrick as unsafe to drink, and a resolution having been unanimously passed at a public meeting of the townspeople held in the Town Hall on Tuesday, September 25th last, calling on the Urban District Council to appoint the best procurable waterworks engineer to examine and report on the whole scheme, and to have his report carried into effect without delay, and this resolution having been sent to the Council for their immediate attention, and having been considered at the meeting of the Council on the 1st inst., but no action taken in making such appointment, we, the inhabitants of Coleraine in public meeting assembled on this 10th day of October, 1923, hereby request the Ministry for Home Affairs to hold a public inquiry into the whole matter at the earliest possible moment.

Correspondence.

THE UNIT SYSTEM IN SURGERY.

Sir,—I have read with the greatest interest Mr. Souttar's review of the reasons which have led the London Hospital to abandon the surgical unit experiment, and venture, since the matter is of the utmost importance to our great teaching schools, to add to it some notes on our experience at the Middlesex Hospital.

Having watched the innovations in the methods of clinical teaching with the greatest interest and anxiety, we, at the Middlesex Hospital, declined, after the fullest consideration, to adopt the professorial unit system, fearing that, in spite of its apparent advantages, it might fail for the very reasons which Mr. Souttar has given. We held, moreover, that the old system could be so varied as to attain all the advantages of the unit system without the drawbacks which have now led the London Hospital to abandon the original whole-time professoriate, and that this development could be effected at a less cost.

We sent a reasoned memorandum to the University Grants Committee, and gave them a definite scheme for which we asked their assistance, and, although this assistance was not forthcoming, we were so confident of the merits of our scheme that we determined to give it a full trial.

Briefly, then, we attached to each surgical, medical, and obstetrical firm a whole-time registrar, whose duties consist in assisting in clinical teaching, carrying out and co-ordinating pathological investigation, following up cases, and, in collaboration with his chief, undertaking definite clinical or pathological research. The opportunity of filling these posts, which carry a salary of £300 a year, and are tenable for three years, appeals to men who have completed resident appointments. These men, while working for higher qualifications, are glad to gain further clinical and pathological experience, together with the opportunity of doing some teaching.

While it is probable that the details can be still further improved, it is quite certain that this plan has increased enormously the value of clinical teaching in the hospital, and of the services rendered to its patients, without in any way restricting the field of practice of the honorary members of the staff. For my part, I can unhesitatingly say that in my own firm I am daily conscious of the increased efficiency that results from the close co-operation of my registrar. The clinical records of my cases are both of more immediate and more permanent value as a result of his supervision. With his help I have been able to carry out more statistical work, and to follow up cases further than I could otherwise have done—one most important aspect of the research work which it is his duty to carry out.

Furthermore, the interest of the students in the cases is fostered by the certainty that they will not miss seeing for themselves the pathological material provided by operation or *post mortem*, demonstrated by a registrar familiar with all other features of the case—an essential preliminary to the final instruction which they receive from the members of the honorary staff. In addition, his presence in the theatre for the collection, and, if necessary, immediate examination of pathological and bacteriological material ensures the full value of such examinations accruing to the patient, to myself, and to the students. He acts as a link between the clinical and the pathological departments.

My colleagues, both on the surgical and on the medical side, are equally impressed with the advance which the creation of the appointments has marked, and we are confident that as we perfect the scheme we shall build up

clinical teaching units equal in value, superior even because of their variety, to the professorial units. All indications are that our own students will be greatly encouraged to send their cases to the Middlesex Hospital, from the knowledge that in addition to their efficient treatment full use will also be made of their value for teaching and research.

The action of the London Hospital to-day, in modifying the professorial unit system, after a full and fair trial, for the reasons and along lines which we advocated some time ago, still further encourages us in our belief that on the progressive development of this registrar system depends the successful solution of the teaching and of the research problems which the growing complexity of modern surgery, as of medicine and obstetrics, has set our schools of medicine.—I am, etc.,

W. Sampson Handley,
Chairman of the Medical Committee of the Middlesex Hospital.

October 30th.

P.S.—The appended extract is taken from a letter of March 14th, 1921, to the University Grants Committee, drafted by our Dean, Mr. A. E. Webb-Johnson. It shows the views held by the governing body and staff of the Middlesex Hospital at that time.

"... The governing body and staff of the Middlesex Hospital Medical School quite realize the advantages that may be expected from the adoption of the unit system, but feel that whole-time professors will not carry that system to its best and fullest degree of development. In the unit system under part-time directors they see great opportunities for the improvement of clinical teaching and research, and the general improvement of the practice of medicine, surgery, and obstetrics, both in hospital and private work. Chosen men will be given great opportunities, but in the opinion of the Council and staff these opportunities might be given to the whole staff of the hospital with greater advantage to teaching and research. They believe that this can be achieved with the expenditure of a third of the amount contemplated under the unit system. ..."

Sir,—To one who has no connexion with any of the clinical units in London, but who has always regarded the inception of the scheme with interest and sympathy, Mr. Souttar's letter in your issue of October 27th (p. 783) has provided a rather unwelcome surprise.

In the first place, everyone is conversant with the excellent work that has been done at the London Hospital, particularly on certain aspects of surgical technique. In the second place, if the London surgical unit has failed in spite of much excellent work, is this an indication that the other surgical units, and perhaps even medical units, will fail also? In view of the importance of the subject it might be as well to examine the position more closely.

The clinical units in London arose from the feeling that not enough research work was being carried out at the London schools, and consequently that London students were missing the university element in their education, which means that they were not being taught by men who were themselves engaged in advancing the knowledge of these subjects. There was little likelihood of research being carried out by physicians and surgeons who had to make their living and keep up a certain state in the most expensive part of London. The advantages of the scheme seemed to lie in the fact that the work of the clinical units was to be carried on side by side with the other work of the hospital, that a student during his career would enjoy both types of education, and that the aim and scope of the education would be rather different in the clinical unit and in the other parallel units of the hospital.

These facts, if true, would seem to dispose of some of the earlier considerations brought forward by Mr. Souttar in his letter. The student "must learn how to deal with human beings who are ill and to discover those from whom he may best obtain assistance when he is out in the world and on his own responsibility." Undoubtedly he must, though I may be forgiven if I refuse to believe that this is more important than the technical knowledge of his profession, as Mr. Souttar seems to imply. Still, if the student is brought into direct contact with the advance of knowledge in the clinical unit, he may well learn the other part of his profession from his other teachers, who are in private practice themselves.

Much the same argument applies to the whole-time teacher himself. It is surely a curious way of describing his outlook to say that his horizon is narrowed to the wards and laboratories of his hospital, when these constitute the very field of his researches.

But I must confess that a still greater surprise awaited me. Mr. Souttar says that research in the surgical unit failed because the special cases so essential to research and to teaching were no longer being sent to the surgical unit. Does surgical research require special cases? I should have thought that the function of the surgical unit would be to investigate the common everyday cases met with in the surgical wards, of which our ignorance is at present sufficiently profound. For instance, if rheumatoid arthritis had been chosen for study, my experience teaches me that the researcher would have been overwhelmed with cases. He could also have applied to the infirmaries. Similarly, if the biochemical relationships of cancer as it occurs in the human body had been chosen, surely sufficient cases would have been forthcoming.

After all, what is surgical research? Sir Berkeley Moynihan has described himself as a physician compelled to practise surgery, and this suggests that there cannot be so very much difference between research in surgery and research in medicine. Surely in either subject research consists in investigating the causes, relationships, and treatment of the diseases met with in the medical or surgical wards, and nowadays great advances are possible owing to the numerous experimental methods elaborated since the beginning of the century.

A paragraph in Sir George Newman's report suggests to my mind that these possibilities of research have not been fully realized in the surgical unit at the London Hospital. It is there stated that "the very thorough system of examination and note-taking is regarded as chief contribution to research." But this is no more than has been carried out by practising physicians and surgeons for a hundred years. It entails careful clinical observations, the co-ordination of certain laboratory findings, and above all ample secretarial assistance. Any careful surgeon or physician in practice could undertake it. A whole-time clinical unit would surely be unnecessary. But will the great advances of medicine and surgery of the future be made by such means? Most emphatically, No! The experimental method will be necessary.—I am, etc.,

A London Teacher.

October 29th.

CHRONIC INTESTINAL STASIS AND CANCER.

Sir,—Sir Arbuthnot Lane's address on chronic intestinal stasis and cancer reported in the Journal (October 27th, p. 745) and your comments thereon give food for thought, for does he not attribute to its baneful influence nearly all the diseases to which the flesh is heir?

But a certain amount of intestinal stasis is physiological, and the bowel is specially designed to achieve stasis for purposes of absorption. Then why is it that this stasis, which ought to be only physiological, so often becomes pathological? Is it not because the lining membrane of the bowel is damaged by the continual use of irritating aperients?

More than forty years of general practice have convinced me of the evils produced by this pernicious habit, which in civilized communities has become wellnigh universal. The habit is generally contracted in the early years of life, and thereby one of Nature's most important periodical arrangements is interfered with and put out of gear, and the disastrous results show themselves later on.—I am, etc.,

John C. Uthoff.

Bournemouth, October 27th.

Sir,—Surely if the teaching of Sir Arbuthnot Lane (British Medical Journal, October 27th, p. 745) on the widespread effects and causation of intestinal stasis is true, it is the greatest and most illuminating truth that has been uttered in the realm of medical science in all the centuries. What other contribution to the etiology of disease, mental and bodily, is there to compare with it in its comprehensiveness, its simplicity, and its appeal to the common sense of doctors and laity alike? Can its truth be refuted? Can it be that, in its simplicity and in the enthusiasm of the teacher, lie the reasons that it has not hitherto been accepted with the acclamation it deserves? It seems to me

that it rests on the solid basis of fact. No one who has seen the anatomical conditions which Sir Arbuthnot Lane describes as existing in cases of intestinal toxaemia can fail to recognize them, or to appreciate the results that must ensue from them.

It has been my good fortune to become convinced, by repeated demonstrations in a series of cases exhibiting various grave manifestations of intestinal toxaemia, of the existence of the anatomical conditions which Sir Arbuthnot Lane describes, and of the little short of marvellous results that have followed on the comparatively simple operative treatment which he is now practising.

The object of this letter is to urge those who have not yet given Sir Arbuthnot Lane's teaching careful and practical consideration to do so without prejudice, and when they are convinced to go out and preach, with all the vigour and conviction that is in them, the evils that follow in the wake of intestinal stasis.—I am, etc.,

London, W., October 25th. S. Henning Belfrage.

CANNABIS INDICA IN SMOKING TOBACCO.

Sir,—In your issue of September 22nd, 1923 (p. 521), you published an interesting memorandum on the presence of cannabis indica in smoking tobacco by Dr. R. L. E. Downer.

I do not recollect having heard of any previous case of such adulteration in England. In Egypt, and the East generally, as is well known, "hashish" is mixed with tobacco—chiefly cigarette tobacco—with the deliberate intention of catering for the palate of the "hashash." Tobaccos and cigarettes so admixed with hashish are expensive and can only be purchased clandestinely. The precise object of mixing cannabis indica with tobacco for sale in England is not clear.

In regard to the analysis submitted—"0.66 per cent. of solid cannabis indica in the sample, equivalent roughly to about 1 drachm of the *British Pharmacopoeia* tincture per ounce of tobacco"—one or two points occur to me. Assuming 7½ minims of the tincture have been known to produce toxic effects (as your correspondent states), then to consume this amount of tincture 3.5 grams or 1/8 of an ounce of tobacco would have to be taken, equivalent to about 3½ cigarettes. I am aware that Indian hemp when smoked is much more rapid in its action than when taken internally. It would be interesting to know if the gentleman who smoked the tobacco was at all affected. There is one further point of interest to a chemist, and that is by what method cannabis indica can be so accurately estimated when present in tobacco. I assume the estimation was carried out microscopically. I am interested at the moment in the question of the relation of the Beam test to the toxicity of samples of cannabis indica and would welcome the information as to whether or not the tobacco in question gave a positive result with the Beam reaction. Indian hemp yields from 10 to 18 per cent. of substances soluble in alcohol (*B.P. Codex*, 1923). Assuming the cannabis indica to yield 15 per cent. of extract from which the tincture was prepared, 0.66 per cent. of extract of cannabis indica would be equivalent to 1 fluid drachm of *B.P.* tincture, but 0.66 per cent. of solid cannabis indica would be equivalent to only 0.16 fluid drachm.—I am, etc.,

E. Griffiths-Jones, M.Sc., A.I.C.

Public Health Laboratories, Department of Public Health, Cairo, Oct. 14th.

ASTHMA DUE TO INSECT POWDER.

Sir,—With regard to the case of asthma due to insect powder, recorded in your issue of October 27th (p. 764) by Drs. Garratt and Bigger, it would be most interesting to know (1) whether the patient was sensitive to dog hair, for dogs enter largely into the history of both her attacks, and (2) whether the insect powder was tested on a normal arm as well as the patient's. I think this should always be done when a reaction is obtained to a new drug; so many articles give reactions on everybody's arms—notably is this so with morphine. Though this drug was the undoubted cause of the asthma of one of my patients, it gave just as large a reaction on my own arm,—I am, etc.,

London, W., October 28th. Frank Coke.

DECREASE OF ACUTE RHEUMATISM.

Sir,—In Dr. Reginald Miller's paper on the etiology and treatment of heart disease in early life, published in the British Medical Journal, October 20th (p. 702), is the following passage referring to acute rheumatism:

> "Still we may at least say that some progress has been made, and it would seem probable that it is to clinical work rather than to public health administration that we attribute what improvement has occurred. It appears to affect the severity rather than the frequency of the disease, and this suggests that earlier diagnosis and more efficient treatment have been the factors responsible for the improvement."

It is of considerable importance that the causes of any decrease in either the amount or severity of acute rheumatism that has taken place should be correctly assessed, for it is upon this knowledge that further action is likely to be based. Thinking, as I do, that the above statement is not correct, I feel that it should not go unchallenged.

In the absence of notification it is not easy to prove with certainty the decrease of a disease, as hospital figures for obvious reasons are not always a true guide. My own experience as house-surgeon at the Blackburn Infirmary thirty-five years ago is remarkable as showing the prevalence of this disease at that time in Blackburn and district. In the years 1888, 1889, and 1890 no less than 100 cases, mostly of a severe type, were treated as in-patients. During the years 1920, 1921, and 1922 I find from the reports that only eleven cases were admitted. I think it may safely be assumed that this disease is now less common, less severe, and is mostly confined to the poorer classes. Dr. Miller says:

> "What is the underlying connexion between rheumatism and poverty? This I believe to be by far the most important question not yet certainly solved."

He is, therefore, of opinion that there is a distinct connexion between rheumatism and poverty. The environment of the poor has during the last thirty or forty years improved enormously, by the abolition of slums and cellar dwellings, improvement of construction of houses, diminished overcrowding, better ventilation of houses, increased household cleanliness, better food and clothing, improved education, and in many other ways, so that it now much more closely approximates to the environment of the better-to-do class. This, I venture to say, is the principal reason that rheumatic fever, which is mostly a disease of the poor, has lessened both in amount and severity, although possibly enucleation of enlarged and infected tonsils may have prevented some cases and medical treatment greatly lessened the severity of others. The same improvement of environment has probably been the cause of lessened virulence of other throat affections such as scarlet fever, diphtheria, and acute suppurative tonsillitis.

The evidence seems to me to point to the fact that in acute rheumatism, as in most other diseases, we shall have to rely principally on those measures which are directed against disease as a whole, and probably the greatest of these is education. It seems desirable, however, that notification should be at once adopted, not necessarily for immediate administrative action, but as the first step towards research into the environmental causes of acute rheumatism.—I am, etc.,

James Wheatley, M.D., D.P.H., Medical Officer of Health, Shropshire.

Shrewsbury, Oct. 29th.

SPASM OF THE LARYNX.

Sir,—I regret extremely if my remarks on vertigo or syncope due to "spasm of the larynx" have in any way done my old friend Dr. Peter McBride an injustice. No chapter on "Laryngeal Vertigo" can be complete without quoting his early statement that the "*ictus laryngis*" is a syncope and not a vertigo. My remarks were necessarily limited and confined to the exposition of what I ventured to consider my own opinion. Dr. McBride's italicizing seems to suggest that it was not my own. In any case it does not appear to be his, because he very plainly states that it is erroneous. Meanwhile, my old friend is quite entitled to his own opinion and I am sure he will think none the worse of me because I form mine.—I am, etc.,

London, W., Oct. 30th. James Dundas-Grant.

HEART DISEASE IN EARLY LIFE.

SIR,—In reading the discussion reported in your issue of October 20th, I am reminded that in rheumatic infection one used to consider the presence of a positive glycogen reaction of the leucocytes concurrent with the activity of a carditis. When the reaction became negative the activity of the carditis was regarded as terminated.

Is this test now discarded? It had the merit of simplicity and helpfulness.—I am, etc.,

Erdington, Birmingham, Oct. 23rd. W. J. BURNS SELKIRK.

THE TREATMENT OF TUBERCULOSIS BY THE SPAHLINGER METHOD.

SIR,—The letter on this subject which you published in your issue of October 20th (p. 734) from Dr. Cheater is likely to produce a false impression. I will therefore try to reply to his points seriatim, in so far as this is possible.

In the first place he asks: "Why has not M. Spahlinger placed his discoveries before the medical and scientific world?" The answer is that M. Spahlinger has already done so. Communications were made to the Académie de Médecine and to the Académie des Sciences in Paris, and the *Lancet* published a note on this method in January, 1922. In these statements the principles on which his work is based were explained.

Dr. Cheater asserts that my statement to the effect that there is no secret about the preparation of the remedies is at variance with the report of the Chief Medical Officer to the Ministry of Health. I repeat that there is no secret about the principles underlying the production of these remedies. It is quite true that the details of the technique remain undisclosed for the time being, but that is to prevent irresponsible persons from producing hurriedly prepared serums and vaccines and so discrediting the remedy.

He then goes on to say, "an offer was unofficially made [by the Ministry] to M. Spahlinger for a medical committee to investigate his method of tratment," and he asks, "Why did not M. Spahlinger accept this offer, especially as he had four hundred cases already treated?" I have carefully studied the report, but I cannot find anything which bears this out. The implication clearly is that M. Spahlinger refused to allow the Ministry to investigate. This is the exact reverse of the truth. So far from declining investigation, M. Spahlinger on several occasions, in 1921 and 1922, asked the Ministry to investigate, with the result that Dr. McNalty was sent to Geneva for this purpose in July, 1922. The outcome of the visit is recorded in the report to which Dr. Cheater refers. The "unofficial offer" referred to by Dr. Cheater was sent in August, 1922, by the Chief Medical Officer to the Ministry of Health, who congratulated M. Spahlinger upon the cases reported on by Dr. McNalty, and suggested that fifty cases should be treated in England by a small expert committee of medical men to demonstrate the efficacy of the treatment. If he had read the report to the end he would have seen that the Chief Medical Officer himself explains why M. Spahlinger was unable to accept this offer. There was no serum.

With regard to the disclosure of the technique, every medical man and bacteriologist who has investigated the work at Geneva (including the representatives of the Ministry of Health) knows the technical difficulties and precision required in the production of these remedies. They will agree with me in opposing any premature publication of the technical details of the manufacture which would enable large quantities of ineffective preparations, said to be made according to Spahlinger's technique, to be hastily placed on the market, thus discrediting the treatment in the eyes of the medical profession.

Dr. Cheater asks why M. Spahlinger refused offers of several hundred thousand pounds. I thought I had made it clear in my last letter that the offers were for commercial interests—that is, for trading monopolies. M. Spahlinger is opposed to any form of monopoly run for profit and requiring that the formulae should remain undisclosed.

Dr. Cheater refers to "bacteriologists more favourably situated than" M. Spahlinger. Who may they be? Spahlinger has the specially trained staff to carry on this most precise and delicate work and a laboratory of which no counterpart exists, fitted with unique and original apparatus invented by him to produce his vaccines and serums. Only to reproduce the plant necessary to carry on this work would cost £20,000 to £30,000. The Chief Medical Officer to the Ministry of Health refers in his report to the fact that "M. Spahlinger controls and directs the work of his large, well equipped bacteriological institute and experimental farm, and the staff have all been trained by him in his own special methods."

All who have visited the institute—and the visitors have been numerous and distinguished—have been favourably impressed with the character of M. Spahlinger's work, and with his sincere desire to place his remedies at the disposal of mankind.—I am, etc.,

Manchester, Oct. 23rd. THOMAS WATTS, M.D., M.P.

SIR,—I am pleased to see the letter of Dr. Nabarro. I had the privilege of accompanying him on the visit to M. Spahlinger's laboratory at Geneva, and can confirm all he says. My interest in the problems of tuberculosis—dating from the day of Koch's publication of his discovery—took me to the intensive course of lectures and demonstrations on heliotherapy at Leysin. This course, commencing at about 8 a.m. daily and ending any time after 8 p.m., was attended by medical men from all over Europe and from South America, Canada, and the United States. I regret to say only three British general practitioners were present. It was at a lecture by Dr. Stephanie of Montana, a pioneer of Swiss sanatorium treatment, that I heard of M. Spahlinger and his work for the first time. However, I know enough of bacteriology and clinical tuberculosis—having served for two years under the late Professor Delépine of the Manchester Public Health Laboratory, who devoted himself specially to tuberculosis—to be able, after the inspection of M. Spahlinger's work, to form the opinion that it would be a crime against humanity to allow that work to lapse. With the characteristics of genius he appears to have thought of everything in the search for a cure. I drew the attention of my colleagues to the unique choice of biological material which was in correspondence with the results of a statistical investigation I made amongst the 1,200 tuberculous patients of Dr. Rollier at Leysin. I have in my pocket the offer of a London financier, failing other assistance, to find the money to commercialize M. Spahlinger's serum. This method of production has hitherto been refused by M. Spahlinger for the same good reasons which also meet Dr. Cheater's objection.—I am, etc.,

Luton, Oct. 29th. JOHN BIRCH.

SIR,—I was very pleased to read Dr. Leonard Williams's letter in your issue of October 27th (p. 786), as he practically answers my queries why M. Spahlinger had not published his technique. There is just one point in the last paragraph of his letter which I should like to rectify—namely, that a representative of the Ministry of Health was not refused permission by M. Spahlinger to investigate his treatment, but that the latter was unable to accept the proposal for a committee to do so. I refer Dr. Williams to page 95 of the report of the Chief Medical Officer to the Ministry of Health for 1922, where this matter is fully set forth.

I am also in cordial agreement with Dr. Nabarro that tuberculosis is of international importance and that no stone should be left unturned to discover a definite and permanent way of successfully combating this disease. For this reason I am still of the opinion that every new discovery, whether great or small, should be published as soon as possible so that other workers in the same field might perhaps derive assistance from it, and the ultimate object be the sooner achieved.—I am, etc.,

GEORGE W. CHEATER, M.B., D.P.H.

Whipps Cross, E., Oct. 29th.

ROYAL MEDICAL BENEVOLENT FUND.

At the last meeting of the Committee forty-four cases were considered and £518 12s. voted to thirty-eight applicants. The following is a summary of some of the cases relieved.

Daughter, aged 29, of L.R.C.P. and S.I. who died in 1919. During the war the applicant was at the Bank of England as a temporary clerk—the temporary staff was dispensed with last July and the applicant, being untrained, has not been successful in obtaining another post. She asked the fund to help with training fees. The Committee made a small grant to render the applicant eligible for help from the R.M.B.F. Guild.

Widow, aged 59, of M.B.Aberd. who died in 1916. Afterwards she lived with her mother, who had a pension, but she died in November last year. Applicant tried to earn a living by keeping poultry, but found that she was out of pocket. Her only income is the interest on £100 War Loan and £250 mortgage. She asked for help to pay her rent (£13). Voted £15.

Daughter, aged 65, of M.D.Aberd. who died in 1904. She has been living with her sister, where they had their rooms free, but applicant developed mental trouble and the trustees of the home said she must find other accommodation. This necessitated her finding a lodging where she would have good attendance and also be near her sister. This was secured a few doors away, but the rent of the one room and box room is £1 a week. Her income is only £60 per annum. Voted £12 in twelve instalments.

Widow, aged 52, of L.R.C.P.S.Edin. who died in 1902. She is a nurse and has found it difficult to obtain work and has only received £90 in the last nine months. Her rent is £20 and she has to find £50 towards her daughter's board, who is a dental student. Applicant asks for a grant towards her daughter's expenses. The Committee made a small grant to render the case eligible for help from the R.M.B.F. Guild.

Widow, aged 30, of L.R.C.P. and S.I. who died suddenly last August. She has two small children. The Committee voted £15.

Widow, aged 35, of M.D.Glas. who died in 1916. Since the death of her husband she has managed to maintain herself and children, but she now asks the fund to assist her in the education of her two children, aged 11 and 8 years. The Committee voted a small grant to enable her to receive assistance from the R.M.B.F. Guild, to whom the case was referred.

Daughter, aged 81, of M.R.C.S. who died in 1868. Applicant was a mental nurse, but is now too old to work. Her total income is £50 per annum and her rent amounts to 6s. 6d. a week. Relieved once, £26 in twelve instalments. The Committee again voted the same amount.

A donation of £2 was received anonymously from Correggio at the beginning of October, and the Treasurer desires to thank the donor and trusts that this acknowledgement will be duly noted.

Subscriptions may be sent to the Honorary Treasurer, Sir Charters Symonds, K.B.E., M.S., at 11, Chandos Street, Cavendish Square, London, W.1.

The Royal Medical Benevolent Fund Guild still receives many applications for clothing, especially for coats and skirts for ladies and girls holding secretarial posts, and suits for working boys. The Guild appeals for second-hand clothes and household articles. The gifts should be sent to the Secretary of the Guild, 43, Bolsover Street, W.1.

Medico-Legal.

UNQUALIFIED PRACTICE AT PLUMSTEAD: CORONER'S STRICTURES.

At an inquest held at Woolwich on October 27th, the coroner (Dr. W. H. Whitehouse) declared that the case disclosed the most flagrant breach of the Medical Act he had ever come across. It appeared that a woman named Healy, aged 72, who had died on the previous Monday, had been attended by Clarence Wilfred O'Donoghue, of a "Health Institute," who gave his address as 55, Heavitree Road, Plumstead, with a temporary address at 109, Alabama Street, Plumstead. A son of the deceased woman stated that Mr. O'Donoghue, as the family "doctor," had been treating his mother for the past twelve months, and had attended at the house. He had always been addressed as "doctor," and had been taken to be a qualified man, and his mother had had great faith in him. On the previous Sunday his mother had a severe attack of a long-standing gastric trouble and vomited blood. Mr. O'Donoghue was summoned and gave her medicines, which afforded some relief, and next day he called again. The woman's condition became very serious, and Mr. O'Donoghue then said that he must have a consultation with another doctor, who came in response to an urgent summons, but the woman died in his presence.

Mr. O'Donoghue, who was warned that the evidence he gave on oath might be used against him in another court, said that he was of Irish descent and was born in India. Asked his profession, he replied, "In medicine," but on being pressed for a more definite answer, he said that he had qualified abroad in the Faculty of State Medicine in India (Calcutta), whose diploma he declared to be the same as the "M.R.C.S." or "L.R.C.P." He said that it embraced medicine, surgery, and midwifery, and was not, as the coroner suggested, concerned only with sanitation and the things which might properly be considered as State medicine. In Plumstead during the last two years he had been attending some nervous cases and anaemias at his consulting rooms, and, exceptionally, he had visited patients in their houses. He had a brass plate bearing the name "Dr. O'Donoghue," but the plate was made with a view to his future qualifications, and the "D" of "Dr." was temporarily smudged out. He was hoping to take the Final English Diploma in London within the next month. He declared that he had been registered by the General Medical Council, which had antedated his studies, but on further questions by the coroner he admitted that his registration by the Council was only as a student. He also produced a card showing that he had received clinical instruction at Manchester Royal Infirmary in 1919, and he stated that he was a member of the Royal Institute of Public Health. In the case of Mrs. Healy he had used a stethoscope and had given advice and medicines. He had set out in a letter to the coroner his views of the case, that he believed the woman to have been suffering from chronic gastritis, and he gave particulars of the mixtures and diet he had prescribed. An hour or two before her death he had called in Dr. Riddell, who found the woman conscious, but failing fast.

Dr. D. F. Riddell, in his evidence, said that he was called to see Mrs. Healy on October 22nd. O'Donoghue, whom he had never seen before, although he had heard of him in the neighbourhood, had been to see his partner, Dr. Clarke, and had told him that he had been called in to see a case, but finding severe haemorrhage he could not attend it himself. Dr. Riddell agreed to go (Dr. Clarke being unable to do so) as it was an urgent case, but on the distinct understanding that O'Donoghue was not in actual attendance on the case. On arrival he found the woman just alive. O'Donoghue was in the house, but he elicited the history from other persons who were present, and not from him. The woman died before he had completed his examination, and in the circumstances he refused to give a death certificate. At the *post-mortem* examination he found appearances which made it evident that the cause of death was haemorrhage due to a ruptured vessel in chronic ulcer of the stomach.

The coroner, addressing Dr. Riddell, said that he had done exactly the right thing, and he hoped that his action with that of the coroner himself would rid the neighbourhood of a pest. To Mr. O'Donoghue he said, "You say you hope to be registered by the General Medical Council very shortly. I hope you will never be registered by the Council. I hope the police or the Medical Defence Union will take very strong action against you." He added that had this woman had other treatment, possibly surgical treatment, she might have been kept alive. To the son of the deceased the coroner said that he sympathized with him in having been grossly misled by having in his house as medical attendant a man who had no right to practise at all in this country, either as physician or surgeon, who knew really nothing about medicine, and could not even spell correctly some of the medical terms he used. He returned a verdict of "Death from natural causes," in accordance with Dr. Riddell's evidence.

Obituary.

JAMES LANE NOTTER, M.D.,

Colonel A.M.S.(ret.); formerly Professor of Hygiene, Army Medical School, Netley.

Colonel James Lane Notter, Army Medical Staff (retired), died in a nursing home at Southampton on October 24th. He was born on February 1st, 1843, the son of the late Richard Notter of Rock Island and Carrigduve, County Cork, and was educated as a Fellow Commoner at Trinity College, Dublin, where he graduated B.A in 1863, M.B. and M.Ch. in 1865, M.D. in 1875, and M.A. in 1891. He also took the L.R.C.S.I., in 1865 and the D.P.H. in 1875. He entered the army as assistant surgeon, passing first into Netley in 1866, and in the old regimental days was medical officer in the Royal Artillery and served in Canada and at Malta. In 1876 he was appointed assistant professor of military hygiene in the Army Medical School at Netley, a post which he held till 1882; from 1889 to 1900 he was professor of the same subject. He was promoted to surgeon colonel in 1896, and retired in 1903. He served in the South African war in 1900-01—on special duty at headquarters of the army—in the colony.

As assistant professor and professor at Netley, Colonel Notter was well known to many successive generations of officers of the R.A.M.C. and of the I.M.S., all who entered these services for over ten years having studied under him. He was frequently employed on special duty in connexion with his specialty; he attended, as British delegate, the International Medical Congresses at Berlin in 1890, at Chicago and Rome in 1893, and at Budapest in 1894; and as representative of the British Foreign Office and War Office signed the convention at the International Sanitary Science Conference at Venice in 1897. He had acted as examiner in public health at the universities of Cambridge, Leeds, Liverpool, Manchester, and Wales, and for the Conjoint Board of the Royal Colleges in England; he was a fellow and ex-chairman of the Council of the Royal Sanitary Institute, ex-president of the Epidemiological Society, and a governor of Wellington College.

He was the author of many works on public health. He edited the eighth edition of Parkes's *Manual of Practical Hygiene* in 1891; with R. H. Firth he wrote *The Theory and Practice of Hygiene*, which reached its third edition in 1908; with the same collaborator he wrote a popular manual on *Hygiene* which reached its tenth edition in 1920. He was the author also of *Practical Domestic Hygiene* (fifth edition, 1907). He also contributed the article on

"Hygiene" in the *Times* edition of the *Encyclopaedia Britannica*, 1902; the chapters on "Air" and "Military Hygiene" in Murphy and Stevenson's *Treatise on Hygiene and Public Health*, 1893; and that on "Hygiene of the Tropics" in Davidson's *Diseases of Warm Climates*, 1893.

He married Fanny, daughter of Surgeon-General J. McIllree, A.M.S., and had one daughter.

The late Sir William Edwards.—"A Brother Officer" writes: Sir William Edwards was eminently human, and therefore a very lovable character. Active in body and simple in his habits, he had absolutely no "frills," but was always the same—kindly, humorous, and withal shrewd. He was never spoilt by good fortune or unduly depressed for long by adversity. As the head of his service or as a private friend he was still—himself. He was an ideal chief. He thoroughly identified himself with the work, aspirations, and interests of his subordinates, and thus created confidence which drew them along with him. Nothing pleased him so much as ensuring that they got their meed and more of credit, when success was at least as much due to his loyal backing, which he modestly kept in the background. I personally owe more than I can say to his support at a critical juncture, and there are doubtless many others similarly indebted to him, though it is known only to themselves. Within a year of his appointment to be Director-General the difficult question of the revision of pay in the I.M.S. came up for settlement. It is only just to his memory to say that he met with a degree of factious opposition, personal discouragement, and even worse, which would have baffled a less single-minded or less honest man. When he was created K.C.I.E. in 1922 the honour was already overdue, but it did not come from India. It is even more difficult to write of him in his private capacity. He was a great reader and had a fund of miscellaneous information which he never obtruded, though it would out at times in the most unexpected way. He was a very entertaining companion, and would on occasion give shrewd criticisms on men and affairs. Though his opinions on others were at times trenchant, they were always just and never unkind. He was both a delightful guest and an admirable host. Modest in his estimation of himself, generous in his appreciation of others, wise in counsel, and unswerving in loyalty to his subordinates, we mourn the loss of a dear friend and—as we say in India—*a real Sahib*.

The late Professor W. Ashley Cummins.—The funeral of the late Professor W. E. Ashley Cummins of University College, Cork, took place on October 20th, at Little Island churchyard, and was attended by a large and representative assembly, which included nearly all the members of the medical profession in Cork, the leading members of other professions, and many of the students of University College, Cork. At St. Finbarr's Cathedral at the morning service on October 21st, the preacher paid an eloquent tribute to the character of Professor Cummins. The following tribute from the medical profession in Cork appeared in the *Cork Examiner* on October 22nd:

"The Cork medical profession records with deep regret the great deprivation it has suffered by the death of Dr. W. Ashley Cummins, who continually occupied an honoured place in the estimation of each and every member. He had filled with integrity the many important positions to which he had been elected during a period of many years. His trained intelligence was always at the service of the members of his profession, who looked for his advice and co-operation in the several intricate problems connected with the daily life of the practitioner. The Cork medical profession, individually and collectively, sorrow over the loss of a much respected colleague. They feel it will be an impossibility to fill his place now vacant in their councils and deliberations. They beg to tender to Mrs. Cummins and the members of his family their earnest sympathy with them in their very sad bereavement."

By the death of Dr. Harry Gordon in his 57th year the Natal Division of the British Medical Association has lost a loyal and valued member. Dr. Gordon was the youngest son of the late Rev. J. Gordon, Rector of Norbury, Cheshire, and was a brother of the late Dr. E. Gordon, who was the first medical graduate of the Victoria University. He was educated at the Manchester Grammar School and Owens College and Manchester Royal Infirmary. He took the diplomas of M.R.C.S. and L.R.C.P. in 1891, and practised for some time in London. On the outbreak of the Boer war he took an appointment as civil surgeon, and went all through the campaign. At the conclusion of the war he joined the Union Castle Line as a surgeon; he remained in that service about ten years, and was well known and highly popular with travellers to and from the colony. On leaving the sea he was for a time resident surgeon at the Addington Hospital, Durban, leaving there to become surgeon to Kynoch's Works and Hospital at Umbogintwini; later he became also medical officer to the Indian Immigration Board. After settling in Umbogintwini he built up a large private practice extending for many miles round. He was one of the best types of general practitioner, and was a very capable surgeon. Two or three years ago his health broke down after an attack of influenza, and in May last came home to England in the hope that the voyage and change would restore him. He stayed some time with an old fellow student and life-long friend—Dr. Thomas Watts, M.P.—at Southport. Unfortunately his health did not improve, and on the return voyage he became so ill that he had to be taken ashore at Cape Town and sent into a nursing home, where he died on October 1st. He leaves a widow and one young son aged 10.

Universities and Colleges.

UNIVERSITY OF CAMBRIDGE.

At a congregation held on October 26th the degree of Doctor of Medicine was conferred on F. T. Burkitt and F. R. G. Heaf.

UNIVERSITY OF ST. ANDREWS.

At a meeting of the University Court of St. Andrews held on October 27th it was reported that Dr. Adam Patrick had accepted the appointment to the chair of medicine and had also been appointed one of the physicians of the Royal Infirmary, Dundee. The Court also approved of the nomination by Professor Patrick of Dr. J. M. Morgan (Dundee) as assistant in the department of medicine.

ROYAL COLLEGE OF PHYSICIANS OF LONDON.

An ordinary Comitia of the Royal College of Physicians of London was held on Thursday, October 25th, at 5 p.m., the President, Sir Humphry Rolleston, occupying the chair.

The Censors Board reported that Mr. George Denison Stillwell had been appointed Jenks Scholar.

The following candidates were admitted members:

Charles Keith Johnstone Hamilton, L.R.C.P., M.C., M.B.Oxf., Donald Hunter, M.D.Lond., L.R.C.P., Duncan Gerard Leys, M.B.Oxf., William Thomas Nelson, M.B.Sydney, Daniel Nicholson, M.D. Manitoba, Ernest Oscar Adolphus Singer, M.B.Edin., Kenneth Harry Tallerman, M.C., M.B.Camb., L.R.C.P.

Licences to practise physic were granted to the following 152 candidates who had conformed to the by-laws and regulations and passed the required examinations:

W. L. Ackerman, J. C. Ainsworth-Davis, R. H. Amm, R. S. Anderson, F. G. A. Armson, I. Atkin, W. Balendra, P. E. Bardsley, *Rose Barranov, J. S. Benzecry, E. M. Bergheim, *Dora M. Berry, E. J. Blackaby, *Margery G. Blackie, L. G. Blair, W. L. Blakemore, D. R. Blunn, A. J. Boase, *Hilda A. Bond, E. G. Bradbeer, R. T. Brain, A. Broido, C. O. S. B. Brooke, *G. G. Brown, J. W. Brown, *Mary Buck, B. H. Burns, *Lily C. Butler, *Kathleen F. Butterfield, F. B. Byrom, C. M. Carruthers, H. K. Christie, D. H. Cockell, M. Cohen, B. A. Coles, A. B. Cooper, R. Cove-Smith, I. S. Cried, G. J. V. Crosby, D. T. Davies, I. G. Davies, T. D. Deighton, *Margaret B. M. Dewhurst, D. Diamond, V. W. Dix, A. F. Doyle, *Doris L. Durie, *Hilda R. Dutton, N. L. B. V. Eckhoff, L. C. J. Edwards, P. Ellman, G. S. W. Evans, W. M. Evans, J. L. Farquharson, S. Farquharson, R. B. Fawkes, H. G. Goldwater, T. S. Goodwin, F. M. Gore, L. J. Green, J. V. Griffiths, P. D. Griffiths, C. J. P. Grosvenor, C. C. Halliwell, A. Harbour, H. E. Harris, *Doris I. Harston, G. T. Henderson, K. W. Heritage, G. Hochschild, *Frances A. Hogben, E. Holmes, J. W. Hopo-Simpson, *Madge W. Hubble, D. F. Hutchinson, L. I. Hyder, C. Izzatt, C. Jee, E. C. James, A. H. Johns, C. E. Keast, *Karin L. E. Kellgren, G. R. Kirkland, C. de W. Kitcat, R. A. E. Klaber, E. H. Koerner, P. E. M. Lanier, *Miriam A. Lawson, J. J. Lewinstein, R. H. Little, A. I. Lucas, A. R. Macdonald, G. B. McMichael, *Margaret D. Mason, G. R. Matthews, G. A. Metcalfe, H. D. N. Miller, G. O. Mitchell, P. Med. Moffatt, C. I. N. Morgan, O. G. Morris, N. Moulson, *Jeannette F. L. Murray, F. W. G. Nash, F. N. Newell-Roberts, M. F. Nicholls, J. R. Nicholson-Lailey, *Muriel L. M. Northcote, P. H. O'Donovan, R. J. Oliver, *Mary E. Ormsby, *Jean Orr-Ewing, *Amy M. Parkinson, J. Parrish, T. W. Preston, C. A. Probert, R. J. V. Pulvertaft, P. G. D. Quinet, K. Rai, W. A. Rankin, J. O. M. Rees, R. D. Reid, W. L. Roberts, H. A. Robertson, *Nina L. D. Robertson, *Sybil H. G. Robinson, T. Robson, D. J. Rose, *Marjorie Rushbrooke, Z. Salama, F. H. Scrutton, J. M. Scott, H. M. Shelley, A. E. Sherwell, *Mary M. Sillito, *Lucy C. Simpson, A. J. D. Smith, N. R. Smith, L. V. Snowman, A. C. Sommerville, M. Stieber, R. M. L. Still, F. O. T. Strange, E. R. S. Sweeney, *Annie Sydenham, F. C. M. Taylor, H. Taylor, R. C. Taylor, L. M. Teuten, B. M. Toop, A. Turner, H. F. Turney, *Helen R. Turover, F. C. O. Valentine, S. Vatcher, D. Vaughan, *Kathleen C. Vost, R. G. R. West, R. Whillis, R. W. White, A. G. E. Wilcock, *Doris Williams, E. L. Williams, *Elsie J. Williams, *Esther Wingate, J. Wolstencroft, T. Wooldridge, H. Yates.

* Under the Medical Act, 1876.

Mr. A. C. Clauson, K.C., was appointed Senior Standing Counsel in the room of Sir Thomas J. C. Tomlin, K.C., appointed Judge in the High Court of Justice.

Dr. J. A. Nixon, C.M.G., was appointed a Representative on the Court of the University of Bristol, vice Dr. Newton Pitt, resigned.

Dr. Arthur J. Hall was appointed a Representative at the University of Sheffield, vice Sir Humphry Rolleston, resigned.

On the motion of the Senior Censor it was resolved that the Licence of the College, which was withdrawn from Reginald Nitch Smith in 1918, and the Licence of the College, withdrawn from David Arnold Chaning Pearce in January last, be now restored.

The President announced that he had appointed Sir Archibald Garrod to deliver the Harveian Oration in 1924.

On the motion of the Registrar alterations in the by-laws relating to the examinations for the licence as passed at last Comitia, were approved for the second time, and it was resolved that David Waters Sutherland, and John Cyril Holditch Leicester, being resident in India, should be admitted to the Fellowship *in absentia*.

Mr. Horace Barlow was appointed to the office of Bedell, vacant by the death of Mr. William Fleming.

The following report was received from the Committee of Management:

I. The Committee of Management recommend—

(1) That a note be inserted at the end of Clause II, Chapter II, of the Regulations for the Diplomas of L.R.C.P. and M.R.C.S. to the effect that "the course in general biology required by Clause VII, 2, may be taken concurrently with the study for the pre-medical examination, in cases where such study is taken at a recognized medical school and hospital."

(2) That the Higher Certificate Examination of the Central Welsh Board be added to the list of examinations in which the subjects of chemistry and physics may be accepted under the conditions of Clause 2, Section II, of the regulations for the preliminary examination and for the pre-medical examination.

(3) That the matriculation examination of the University of Queensland be added to the list of examinations recognized for the preliminary examination in general education.

The recommendations were adopted, and Dr. J. A. Ormerod was reappointed a member of the Committee of Management.

SOCIETY OF APOTHECARIES OF LONDON.

THE following candidates have passed in the subjects indicated:

SURGERY.—R. S. Chambers, G. Israelstam, T. J. Liengme, D. Parsons.

MEDICINE.—E. N. C. Annis, R. Caplan, R. S. Chambers, D. Dimitrijevitch, S. Halperin, G. A. Lord, T. J. Liengme, M. A. E. Somers, A. J. Vickery.

FORENSIC MEDICINE.—E. N. C. Annis, R. S. Chambers, D. Dimitrijevitch, C. J. Fox, S. Halperin, W. M. Jones, Y. N. Lal, T. J. Liengme, G. A. Lord, W. R. H. Pooler.

MIDWIFERY.—H. J. Adams, H. P. Burns, H. T. Chiswell, A. J. M. Davies, S. Halperin, T. J. Liengme.

The Diploma of the Society was granted to Messrs. E. N. C. Annis, R. S. Chambers, T. J. Liengme, G. A. Lord, W. R. H. Pooler.

Medical News.

AT a meeting of the staff of the Wellcome Bureau of Scientific Research on October 29th Dr. Wenyon, in making a presentation to the retiring Director-in-Chief, Dr. Andrew Balfour, and his deputy, Colonel G. E. F. Stammers, who is also retiring, spoke of the admiration and esteem he and his colleagues felt for them. Each in turn thanked Dr. Wenyon and the other members of the staff, and expressed their hopes for the future prosperity of the Bureau. Dr. Balfour, we understand, before taking up his duties as Director of the School of Hygiene, will carry out a mission he had already undertaken to Bermuda.

THE new East Sussex Hospital erected in Cambridge Road, overlooking White Rock Gardens, Hastings, was formally opened by H.R.H. Princess Alice, Countess of Athlone, on October 23rd. Major W. H. Mallen, J.P., chairman of the hospital, said that the cost of the new building, amounting to £120,000, had been subscribed. The institution, which served Hastings, Bexhill, and the surrounding districts of East Sussex, had been erected on a site presented to the hospital by a committee in memory of the late King Edward VII. Her Royal Highness, having declared the hospital opened, congratulated everyone associated with the collection of the money, and said it was an achievement of which they might well feel proud; she subsequently made a tour of the hospital.

THE publication in 1798 of Jenner's *Inquiry into the Causes and Effects of the Variolae Vaccinae* was one of the most notable events in the history of medicine. It is only rarely nowadays that a copy of the first edition, dedicated to Dr. Parry of Bath, or of the second edition, dedicated to the King, is obtainable by the book-lover, and many medical libraries, public and private, must be without either. In these circumstances, and appropriately in this centenary year, a firm of publishers in Milan is issuing a facsimile of the thin old quarto. The volume is to contain four hand-coloured plates, and to be bound in boards as the original was. The net price is 55 lire, equivalent to about 11s., and the publishers are Messrs. R. Lier and Co., 7, Via Brera, Milano 1, Italia.

IN addition to the courses announced last week, the Fellowship of Medicine has arranged for a series of lectures to be given at the Children's Clinic, Western General Dispensary, from November 12th to December 6th at 5 p.m. Further particulars can be obtained from the Secretary of the Fellowship, 1, Wimpole Street, W.1.

SIR OLIVER LODGE will deliver his presidential address to the Röntgen Society on Tuesday next at a meeting to be held in the Institution of Electrical Engineers, Savoy Place, W.C.2, at 8.15 p.m. The subject is *x* rays and the atom.

THE nineteenth annual dinner of the Birmingham and Midland Edinburgh Graduates' Club was held on October 25th at the Queen's Hotel, Birmingham; the President (Dr. J. R. Ratcliffe) was in the chair. Over fifty members were present, and spent a very enjoyable evening. Professor Arthur Robinson was the guest of the evening, and replied to the toast of the University in a delightful speech, in which, after giving reminiscences of his own student life, he described the Edinburgh school as it is to-day, and indicated its probable development in the future.

THE annual dinner of the past and present students of the Durham University College of Medicine will be held in the King's Hall, Armstrong College, on Tuesday, November 27th, at 7.30 p.m. Tickets, price 10s. 6d., may be obtained from the Honorary Secretary, Re-Union Dinner Committee, College of Medicine, Newcastle-on-Tyne.

THE next meeting of the Dental Board of the United Kingdom will begin on Tuesday, November 13th, at 2 p.m., when the chairman will deliver an address and the Board will consider disciplinary and other business.

DR. J. R. KAYE, county medical officer of health for the West Riding of Yorkshire, was entertained at dinner on October 12th, when he was presented with a pair of silver Georgian candelabra as an appreciation of the valuable and long services rendered by him to the Association of County Medical Officers of Health of England and Wales.

THE People's League of Health (12, Stratford Place, W.1) is arranging a series of four lectures on "Sunlight and Health," by Sir Henry Gauvain, M.D., M.Ch., and Dr. Saleeby, to be given at the Royal Society of Arts, John Street, Adelphi, commencing on Monday, November 5th, and following Mondays, at 6 p.m.

THE Minister of Health has appointed Mr. P. A. Ellis Richards, F.I.C., President of the Society of Public Analysts, to be a member of the Committee on Preservatives and Colouring Matters in Food, in the place of Mr. Otto Hehner, F.I.C., who has resigned from the committee in consequence of having to return to South Africa.

A WORK entitled *Psycho-analysis Analysed*, by Dr. P. McBride, with an introduction by Sir Bryan Donkin, M.D., will shortly be published (Heinemann Medical Books). In it Dr. McBride gives his reasons why psycho-analysis does not deserve a position in scientific medicine.

THE Canadian Medical Association has arranged for a Lister oration to be given once every three years. The first oration will be given at the annual meeting of the Association at Ottawa in 1924 by Dr. John Stewart of Halifax, who is a former house-surgeon of Lister's.

DR. CHARLES K. MILLS of Philadelphia has been elected president of the American Neurological Association for the ensuing year in succession to Dr. Harvey Cushing.

THE College of Physicians of Philadelphia announces that the next award of the Alvarenga Prize, amounting to about 300 dollars, will be made in 1924. Essays may be upon any subject in medicine, but cannot have been published; they must be received by the secretary of the college, 19, South 22nd Street, Philadelphia, U.S.A., on or before May 1st, 1924. Each essay must be typewritten and unsigned, but marked with a motto and accompanied by a sealed envelope having on its outside the motto and within the name and address of the author. The prize for 1923 has been awarded to Dr. Edward P. Heller.

THE October number of *Tubercle* is devoted to the surgery of the lungs and pleurae. Mr. H. Morriston Davies contributes an article on the progress of surgery of the lungs and cavity, and Dr. L. W. Shelly writes on anaesthesia in thoracic surgery. The number contains a bibliography of articles on chest surgery published during and since 1920, and a list of recent books on chest surgery; these references occupy between five and six pages. The statistical section of this number deals with thoracic suppuration and new growths, and includes mortality statistics for England and Wales. *Tubercle* is published by Messrs. John Bale, Sons, and Danielsson, Ltd., Great Titchfield Street, London, W.1, and the price is 2s. 6d. each number, or 25s. per annum.

THE annual dinner of the Chelsea Clinical Society was held at the Café Royal on October 30th, with the President, Dr. G. Crewdson Thomas, in the chair. The toast of "Prosperity to the Society" was proposed by Dr. J. A. Torrens, Dean of St. George's Hospital Medical School, who praised the valuable work undertaken by such societies, which concentrate on the practical problems of private practice. The President in his reply expressed the gratitude of the society to St. George's Hospital for providing a meeting place. The society was now twenty-seven years old, and had come to the "dangerous age" when original members were passing away. In order to maintain the interest of its members the present session would be devoted to discussions on common diseases as seen in general practice, and he appealed to general practitioners to contribute their experiences. The toast of "The Visitors" was proposed by Sir Sydney Russell-Wells, M.P., who spoke of the services performed in promoting good fellowship within the medical world of London by the Chelsea Clinical, the Hunterian, the Harveian, and the West London Medico-Chirurgical Societies, each of which was represented that evening by its president. The work of these societies did much in modern times to reproduce that spirit of fellowship within the learned world which was a feature of the mediaeval universities of Europe. The toast was responded to by Sir Bruce Bruce-Porter (President of the Hunterian Society) and Sir William Willcox (President of the West London Medico-Chirurgical Society), and the proceedings closed with the health of the Chairman, proposed by Dr. Gordon Lane.

THE fourth congress of the Surgical Society of Central Germany will be held at Brunswick on November 11th, when the following subjects will be discussed: (1) Surgical treatment of epilepsy, introduced by Professor Felix Franke; (2) surgical treatment of hydrocephalus, introduced by Professor Wrede.

THE first meeting of the Petrograd Pathological Society since the war was recently held, and was attended by Professors Lubarsch and Aschoff at the special invitation of the Russian Soviet Government.

THE Montreal Maternity Hospital has been merged with the Royal Victoria Hospital, Montreal, and it is proposed to erect in the grounds of the latter institution a maternity pavilion, thus increasing the teaching facilities of McGill University.

AT a joint conference between the National Council for Combating Venereal Diseases and the Society for the Prevention of Venereal Disease, held at 1, Wimpole Street, on October 30th, the following resolutions were adopted: (1) "That the ultimate fusion of the two societies is desirable." (2) "Subject to the approval of their respective executives this Conference resolves itself into a deputation to the Ministry of Health to urge that 'the law should be altered so as to permit properly qualified chemists to sell *ad hoc* disinfectants, provided such disinfectants are sold in a form approved and with instructions for use approved by some competent authority.'" (3) "That this Conference recommends that the respective executives of the two societies should each appoint not more than five members to form a liaison committee between the two societies and to explore the possibility of fusion."

Letters, Notes, and Answers.

THE postal address of the BRITISH MEDICAL ASSOCIATION and BRITISH MEDICAL JOURNAL is 429, Strand, London, W.C.2. The telegraphic addresses are:

1. EDITOR of the BRITISH MEDICAL JOURNAL, *Aitiology Westrand, London*; telephone, 2630, Gerrard.
2. FINANCIAL SECRETARY AND BUSINESS MANAGER (Advertisements, etc.), *Articulate Westrand, London;* telephone, 2630, Gerrard.
3. MEDICAL SECRETARY, *Mediscera Westrand, London;* telephone, 2630, Gerrard. The address of the Irish Office of the British Medical Association is 16, South Frederick Street, Dublin (telegrams: *Bacillus, Dublin*; telephone, 4737, Dublin), and of the Scottish Office, 6, Rutland Square, Edinburgh (telegrams: *Associate, Edinburgh*; telephone, 4361, Central).

QUERIES AND ANSWERS.

"D. G."—We believe that no new edition of Allbutt's *System* will see the light in the next year or two.

INFANTILE JAUNDICE.

DR. H. E. BAMBER writes: Is there any association between the time after birth at which the cord of the newborn infant is tied and the tendency to jaundice of the infant? The opinion of a very experienced general practitioner under whom I once worked and who first called my attention to it was that jaundice in the newborn infant was more liable to occur if the cord was tied very soon after birth.

INCOME TAX.

Book Debts.

"J. S. H." asks: Can the inspector of taxes demand a return of the total of outstanding book debts at the end of the financial year, and can he claim tax on a proportion of these debts?

*** Strictly, the gross amount of the income of the practice is the total value of the debts which the year's work represents—that is, as near as can possibly be ascertained, the actual cash receipts during the year *plus* any increase or less any decrease in the *value* of the debts outstanding at the end of the year as compared with that at the beginning. The difficulty of estimating correctly or even approximately the value of a medical man's book debts nee is no emphasis, and the practice of regarding the theoretical gross income *of* any year as coinciding with the actual cash receipts *in* that year is of long standing and general application. It is, of course, based on the obvious truth that where the volume of debts remains fairly constant the two methods of reckoning must produce very nearly the same result in the long run. But where the circumstances of the practice are peculiar so that the inclusion of payment for debts incurred in past years does not approximately balance the exclusion of unpaid debts of the present year, the Revenue authorities are within their rights, both in law and equity, in discarding the cash basis system, and so is the practitioner if he wishes to do so. Unless, however, there are such circumstances in "J. S. H.'s" case—such as the recent taking over of the whole or part of a practice—he would do well to explain the position and oppose a departure from the normal method in his own case.

Motor Car Transactions.

"M. D. S." bought a car in 1918 for £273 and sold it in 1922 for £180, buying a car of similar make and power for £390. What allowance can he claim?

*** The allowance should be £390−£180=£210. The inspector objects on the ground that the more modern car is bound to be an improved model, and that therefore there is a capital improvement. We do not agree with the conclusion he draws. The official witness before the Royal Commission on the Income Tax agreed that where the cost of a machine rose the replacement cost should be determined by the new level of cost. Admitting, for the sake of argument, that the newer model is better in some respects than the old, it nevertheless remains the fact that a precisely similar car would cost as much as—in fact, in all probability, more than—the actual car which was purchased.

LETTERS, NOTES, ETC.

FOREIGN BODY IN THE INTESTINE.

DR. J. F. D. WILLOUGHBY (Southwell, Notts) writes: On October 22nd I was called in to see a child 2 years old who was said to have swallowed a metal pin with a large knob at one end used to fasten the apron to the side of her perambulator. Immediately after she had swallowed it the child was sick, but in thirty-six hours the foreign body had passed through the gullet, stomach, small and large intestines, without the slightest pain or inconvenience. When the pin was passed per anum it had a thick coating of faeces, the result of the soft bulky food she was ordered to take. The large size of the pin and complete absence of symptoms during its passage appeared to me to be of sufficient interest to record. The pin is 1¾ inches long and the head at its broadest part 1/2 inch wide.

CURAÇOA.

VARIOUS versions of Luttrell's punning verses on the illness of the Prince Regent, afterwards George IV, have been given. The following, which was printed by Sir Algernon West in his book of reminiscences, *One City and Many Men*, is probably as correct as any:

Sad news! The Prince is taken ill—
All will depend on Halford's skill.
"Tell, Sir Ben," says the physician:
"How comes he in this low condition?"
When Bloomfield ventured to announce
A small excess of cherry bounce,
The Regent, hearing what was said,
Raised from the couch his aching head
And cried in accents weak and low,
Curaçoa—curaçoa—cure us O Doctor, cure us O.

Sir Ben was the Prince's personal attendant, afterwards Lord Bloomfield.

VACANCIES.

NOTIFICATIONS of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 41, 43, 44, and 45 of our advertisement columns, and advertisements as to partnerships, assistantships, and locumtenencies at pages 42 and 43.

A short summary of vacant posts notified in the advertisement columns appears in the *Supplement* at page 215.